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Philadelphia, April, 1845.

UNITED STATES

EXPLORING EXPEDITION.

MAP
OF THE WORLD
SHEWING THE TRACKS
OF THE
U. S. EXPLORING EXPEDITION
IN
1838. 39. 40. 41 & 42
NOTE
Vincennes or Sqd.
Peacock
Porpoise
Flying Fish
Oregon
Relief
NORTH AMERICA
GREENLAND
ATLANTIC OR WESTERN OCEAN
NORTHERN PACIFIC OCEAN
INDIAN OCEAN
SOUTHERN PACIFIC OCEAN
SOUTHERN OCEAN
SOUTH AMERICA
New Holland
Antartic Continent
Enderby's Land
Palmer's Land
Japan Islands
Luzon
Philippines
Singapore
Sumatra
Borneo
Java
New Guinea
Caroline Is.
Kingmill
Oahu
Hawaii
Sandwich Is.
Washington I.
Phœnix Gr.
Union Gr.
Samoa
Ellicos I.
Feejee Is.
Tonga
New Hebrides
New Caledonia
Society Is.
Marquesas
Paumotu Arch.
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Van Diemens Land
Lord Aucklands Is.
Macquarie I.
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Columbia R.
San Francisco
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Bermudas
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Madeira
Cape Verds
Galapagos
Callao
Ambroise
Valparaiso
Juan Fernandez
Rio Negro
Cape Horn
Falkland Is.
Rio Janeiro
St. Helena

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INTRODUCTION.

THE Expedition, a narrative of the operations of which is now laid before the public, was the first, and is still the only one fitted out by national munificence for scientific objects, that has ever left our shores. It would, therefore, appear proper that a more minute account of its outfit should be given, than could be expected of one despatched by an older nation. This is more particularly the case, as a great part of the difficulties it had to encounter, occurred previously to its sailing. I would not, however, have the reader to believe that I intend to enter into details of transactions of which, perhaps, no one knows the origin, or to speculate on the causes that operated to prevent its sailing within a reasonable time after the passage of the Act of Congress directing it to be undertaken.

The command of the Exploring Expedition devolved upon me, by orders from the Hon. Mahlon Dickerson, then Secretary of the Navy, on the 20th March, 1838. At that time, great confusion existed in its organization. It is unnecessary, and would be out of place here, to enter into its previous history. It is sufficient to refer to the fact, that it had already been denounced as an entire and complete failure, and that I was instructed to organize it anew.

Whatever others are disposed to think, I am inclined to believe, that the originating, getting up, and getting off a first National Expedition, is a work of no small difficulty, and this is much increased by the public thinking, talking of,

and interfering too much with it. I felt this myself, although it did not cause me much difficulty. The successive resignations of the different officers who had been appointed to the command, led every body to look upon it with disgust, and, in consequence, my road was clear, or comparatively unembarrassed. The very state of things that brought the Expedition into general disrepute, was of great advantage to me, for I was left to perform my duties unmolested. One of the difficulties I had to encounter, was to make a selection from the numerous articles provided, and this was a work of no ordinary kind. They may have been all useful, and perhaps necessary for a larger Squadron; but if all had been embarked, every vessel of the Squadron would have been filled. Every expense that could be lavished on its equipment had been incurred. One rule of action soon brought me to dispose of the whole: this was the capacity to stow them; and parts of each were accordingly selected for the new order of things.

On the 20th of April, I was informed that the vessels appointed for this service were the sloops of war Vincennes and Peacock, the brig Porpoise, and store-ship Relief. The tenders Sea-Gull and Flying-Fish were subsequently added.

The Relief was the only one of the vessels that had belonged to the original Squadron.

On this reduction of force, it became necessary to change the organization, not only in point of numbers, but also to bring the officers into more intimate connexion with the scientific duties.

This was done by placing all those departments that in any way appertained or belonged to our profession under my direction, with officers of the navy for assistants. The size and accommodation of the vessels naturally led to the reduction of those departments that were placed under the corps of civilians, including naturalists as well as artists. As many of these were taken as could be accommodated. The selection was made with much deliberation, and with great impartiality. Reference was had to the departments in which results were most to be expected, and most desired by the country. The only new one added was the Horticulturist and Assistant-Botanist, Mr. Brackenridge.

After the 20th of April, every exertion was made to forward the various outfits. By the 7th July, the Vincennes and Peacock were taken charge of, and dropped down between the forts at Norfolk, and it was determined that the Squadron should rendezvous in Hampton Roads. On the following day, the seamen were transferred from the Macedonian, which had been the flag-ship under the original organization. I felt some solicitude about the crews. They

had been a long time shipped, and had manifested their discontent in a letter addressed to the Secretary of the Navy, in which they objected to being transferred to a younger and new set of officers. The plan I adopted was at once to send them on shore on liberty, and thus show entire confidence in them. To my great surprise, they returned, to a man, showing that no disposition adverse to the service existed among them, and that the bad feeling was nothing more than what might naturally be expected to result from a long confinement on board of a ship, in sight of their homes, and the constant disappointment they had met with in a delayed departure. From this circumstance, and the prospect of no further detention, their spirits revived, and great activity prevailed in all the departments to forward the preparations. All the instruments had been brought from New York in the Macedonian, under care of Lieutenant Carr. Part of them, including the Chronometers, had been landed at the Naval Asylum, where a Portable Transit had been put up, for rating them. The instruments appertaining to Magnetism and the Pendulums were carried to Washington, to make the necessary experiments.

The depot of charts and instruments on Capitol Hill, was selected to make the series of observations at. These occupied my own time until sailing.

On the 26th of July, Martin Van Buren, the President of the United States, accompanied by Mr. Paulding, Secretary of the Navy, and Mr. Poinsett, Secretary of War, did us the honour to visit the Vincennes. On this occasion, and the only one during the continuance of my command, a salute was fired, (none of the instruments had then been embarked,) by all the vessels, and the yards were manned. This produced a good effect on all, for it showed us that a watchful eye was kept over us, and that much interest was felt in the undertaking. This visit formed an epoch to which I often heard reference made during the cruise. Few are able to estimate the feelings of satisfaction that such acts occasion to those engaged in undertakings like this.

I shall now proceed to give a description of the vessels that composed the Squadron.

The Vincennes was a sloop of war, of seven hundred and eighty tons, originally single-decked, but in consequence of the intended cruise, a light deck was put on her for the protection of the men, and to afford more room. The accommodations thus became those of a small frigate.

The Peacock was of smaller size, a sloop of war of six hundred and fifty tons, originally built for this service in 1828, with a deck like that of the Vincennes. She had made two cruises previous to her sailing in 1838.

The Porpoise, a gun-brig of two hundred and thirty tons. The experience I had had in this vessel induced me to ask for an alteration, which was made, and added much to her safety, as well as increased her accommodations. This was to build a poop-cabin and a forecastle on her deck.

The tenders Sea-Gull and Flying-Fish were New York pilot-boats. The former had been known as the New Jersey, of one hundred and ten tons; the latter as the Independence, of ninety-six tons. They were purchased on the 3d of August. Their masts, sails, &c., were reduced, and their outfits completed in the short space of three days, by those enterprising shipwrights, Messrs. Webb and Allen of New York, to whom much credit is due. They joined the Squadron on the 12th of August, in Hampton Roads.

The Relief was a new vessel, originally intended for a store-ship for the Navy, but had been transferred to the Expedition on being launched. She was built for carrying, and her slow rate of sailing made her ill adapted for the cruise.

The Expedition is much indebted to Commodore Ridgely and the officers of the Brooklyn Navy-Yard. To Commodore Downes and Captain Percival, of the Boston Navy-Yard, we are also under great obligations. The boats prepared under the direction of the last named officers, were found to be well adapted for the service. They were all clinker-built, with the exception of the launches, and of the description used by whalers and sealers.

After the Peacock's return in 1837, she had undergone little or no repairs. Her bottom was indeed sound, being built of live-oak, but her upper-works were worn and much decayed, as the sequel proved. After this vessel left the Navy-Yard at Norfolk, her fore and cross-jackyards were found by her commander to be rotten. On its being reported to the commandant of the yard, they were ordered to be replaced, and all the other defects partially remedied.

The carpenter of the Washington Navy-Yard, Mr. J. H. Smoot, built for me, under order of the Commissioners of the Navy, a very convenient portable pendulum-house and observatory, which answered every purpose for which it was intended.

The organization of this Expedition has frequently been a subject of remark. I have therefore obtained all the papers that passed between the government and Captain Hudson, in relation to it, prior to his accepting the position he occupied. They form, with a few remarks, the first pages of the Appendix to this volume, and will place the whole in its true light.

The Narrative will fully show the part he has taken in carrying out the

instructions of the Department, and I must acknowledge and return my thanks to him for the aid he afforded me in the arduous duties that devolved upon me.

To Lieutenant Cadwalader Ringgold, the commander of the Porpoise, I am indebted, for his hearty co-operation in the duties that devolved upon the Expedition. The efficient manner in which he at all times held his command, and the promptness with which he carried out the duties assigned him, merit my warmest acknowledgments and thanks.

The best encomium I can bestow on the united efforts of the officers and men, is to refer the reader to the Hydrographical Atlas, and the details in the Narrative of the duties which have been performed.

In the observatory duties and pendulum observations, I was principally assisted by Lieutenant Carr, Passed Midshipmen Eld and Blunt, and Mr. Howison. I deem it my duty to speak of the devotedness of Assistant-Surgeons Fox and Holmes, who, besides attending to their engrossing medical duties and meteorological observations, manifested the utmost zeal in collecting and making researches in the various departments of natural history. They also frequently assisted in the surveys, and I found them ever ready to engage in any thing that could promote the success of the Expedition.

It gives me great pleasure to acknowledge the credit that is due, and the obligations I feel under to Mr. R. R. Waldron and Mr. William Spieden, Pursers attached to the Expedition, for their promptness in procuring the supplies, and at all times forwarding the business of the Expedition; none of the departments of the service were more efficient than that over which they had control.

Since our return, Lieutenants Carr, Budd, Totten, and Eld, with Mr. F. D. Stuart, who were attached to the Expedition, have been engaged under my direction in recalculating and revising our numerous surveys, previous to their being engraved.

To Messrs. Drayton and Agate, the Artists of the Expedition, I feel it due to make known how constantly and faithfully they have performed their duties. The illustrations of these volumes will bear ample testimony to the amount of their labours, and the accuracy with which they have been executed.

Mr. Drayton has had the management of the whole engraving department assigned him by the Committee of the Library, and has accomplished what very few believed could be done in this country. The distribution of the work among the engravers has given general satisfaction, not only to the Committee, but to the artists themselves, and has afforded a national encouragement to this description of art, the benefit of which it will long continue to feel.

To Mr. Drayton I owe many acknowledgments for his constant and untiring zeal in all the departments of the Expedition, not only during the continuance of the Expedition, but since its return, while acting in concert with me in preparing the illustrations of the Narrative for the press. I cannot but congratulate myself that we should have been so fortunate in having one attached to the Expedition so well adapted to encounter, and from his former experience to overcome, the difficulties we have had to contend with in the progress of the publication.

The country is particularly indebted to the Joint Committees of two successive Congresses* who have had the execution of the law for the publication of the results of the Exploring Expedition entrusted to them. They have afforded me all the assistance I could desire; and through the facilities obtained, I have been enabled to bring the Narrative to completion at a much earlier day than I at first anticipated.

To the Hon. Benjamin Tappan especially, I feel under obligations for the great interest he has ever taken in the Expedition. The law for the publication was originally reported by him; he was at an early day appointed the Agent of the Committee to superintend the whole work in its progress; and it has afforded me great pleasure, as well as satisfaction, to co-operate with one so competent to the task.

I am aware that some dissatisfaction was occasionally felt at the outset by a few of the naturalists, because they were not allowed all the opportunities

* Members of the Joint Committee on the Library of Congress, at the Second Session of the Twenty-seventh Congress:

SENATORS.	REPRESENTATIVES.
Hon. William C. Preston, Chairman,	Hon. Joseph L. Tillinghast,
Benjamin Tappan,	John B. Aycrigg,
Rufus Choate.	Thomas D. Sumter.

At the Third Session of the Twenty-seventh Congress:

SENATORS.	REPRESENTATIVES.
Hon. William Woodbridge, Chairman,	Hon. Joseph L. Tillinghast,
Benjamin Tappan,	John B. Aycrigg,
Rufus Choate.	Thomas D. Sumter.

At the First Session of the Twenty-eighth Congress.

SENATORS.	REPRESENTATIVES.
Hon. Rufus Choate, Chairman,	Hon. Edmund Burke,
Benjamin Tappan,	George P. Marsh,
John M. Berrien.	William B. Maclay.

they desired of making investigations. It was not to be supposed, from the many interests, and their inexperience in naval duties, that all could agree that the particular objects of their several departments received the proper consideration. Each would naturally look upon his own as the most important. They were not aware of my instructions, and of the duties that were enjoined upon me; and I think did not take into consideration the loss of time I had met with from various causes, and that my intentions were at times unexpectedly frustrated. Besides, it was my duty to look to the essential objects of the Expedition, which were entirely unknown to them. They are now, after the cruise has passed, I believe fully satisfied that it was not possible, without sacrificing the greater interests, to give more attention than I did to subordinate parts.

I cannot avoid bearing testimony to their perseverance, industry, zeal, and strict conformity to the rules and regulations laid down for the government of us all. The result of their labours will shortly be before the public, and will show the manner in which they have performed their duties. They messed with the ward-room officers, and received all the privileges, respect, and attention due to that rank.

In the following Narrative, it may perhaps be necessary to state, that although our time was limited to a few days at some of the places we visited, yet the number of officers and gentlemen engaged under my command, enabled me to have every thing worthy of notice examined. The result of our observations, I am satisfied, will give a faithful representation of the countries and islands, during the period of our visit.

I received every facility for obtaining information from our consuls, as well as from missionaries and American residents abroad. Some of them furnished me with interesting documents, connected with the past and present state of the countries where they reside, and procured from the different governments many valuable official papers. Indeed, the facilities met with have evinced a desire in all to further the undertaking with which I was charged.

To the Governor of New South Wales, Sir George Gipps, my acknowledgments are particularly due, for his generous liberality in ordering me to be furnished by the Colonial Secretary, E. Deas Thompson, Esq., with all the documents published, not only at the time of our visit, but since. The latter have been kindly forwarded by our consul, J. H. Williams, Esq., to whom the Expedition is also greatly indebted. From all these documents I have been enabled to draw much valuable information, which I hope will be interesting to the general reader, as well as useful to our interests abroad.

The reader who shall look to this Narrative for my version of the developements which were elicited by the proceedings of the courts-martial, will be disappointed, as I shall make no allusions that I can possibly avoid, to any of the subjects of a personal character that came before those tribunals, that occurred after the return of the Expedition; nor will the following Narrative embrace any personal matters or difficulties that may have taken place with the officers, for the reason that I do not regard such details as relevant or interesting to the general reader. The attempts to throw impediments in my way were unsuccessful, and I fully believe, that from whatever motive they may have arisen, those who caused them are now desirous that they should be forgotten. My countrymen will see that my duties were sufficiently arduous without having other difficulties to contend with, and I have the gratification of feeling that those duties have been performed, and the results fairly obtained.

The performance of these duties is the best refutation that can be given to the many misstatements that have been circulated to the prejudice of the Expedition, but which, I trust, will now be set at rest. I have never had any personal feeling in the matter, except that which naturally arises from the wish to overcome all impediments, of whatever nature they might be. I can, therefore, have no desire but to give the true version of every circumstance of a public nature that may concern the Expedition, and I hope that I shall be able to do it with impartiality and justice, touching as lightly as possible on the faults of individuals, and bestowing praise wherever it is justly due.

The objects intended to be accomplished by the Expedition, were such as to require not merely the usual obedience to the orders of its commander, but demanded, in addition, a zeal, that could only be inspired by a strong interest in its success, and intelligence of a higher character than is called into action in the ordinary routine of the duty of an officer. Deficiency in either quality was to oppose an obstacle to the success of the enterprise; in a word, we were placed in circumstances in which it became necessary for us to perform more than our ordinary duties. Those who felt and appreciated our situation, are entitled to the highest praise; while some apology may be made for others, who, perhaps, were unconscious of any failure in discipline, or actual dereliction of duty, and may have thought that they had cause to be aggrieved, when they found that I was not satisfied with the manner in which their services were rendered; yet, it was as incumbent on me to see that our work was not retarded by their want of zeal and knowledge, as to shorten sail on the approach of the tempest.

The instruments I was supplied with, were procured by myself in Europe;

they were made by the best English, French, and German artists. A description of these will be given in the volume on Physics.

The longitudes of our principal stations have been determined by series of moon culminating stars, and meridian distances have been measured from them to other points by chronometers.

The latitudes of the important places were obtained by a number of sets of circum-meridian observations of sun and stars.

The chronometers used were by the best English makers, and most of them performed very satisfactorily. But two out of the twenty-nine became defective, and stopped; these will be more particularly noticed hereafter, in the volume pertaining to this subject. To it I must also refer for the manner in which our surveys were executed.

The magnetical instruments were by both English and French makers. Results have been had throughout the cruise, and will serve to give a magnetic chart of the world; these will be published in the volume on Physics. Those observations of more immediate interest in the high southern latitudes, will be embraced in these volumes.

In the Appendix will be found all the official documents relating to the operations of the Squadron. These I have thought it necessary to lay before the public, in order that it may have a full view of the whole of the operations in which the Squadron was employed, and may be able to examine and compare the orders under which we acted, with the duties which have been performed. The Narrative will embody all those which we executed, and will thus enable all to judge how the work was conducted. I have a strong desire also that the whole should appear, in order that the Expedition may stand before the country and the world, in its true merits. When they become aware of all the facts, they will be able to see the injustice that has been done it,—will wonder at the extraordinary reception that awaited its return, and the persecutions I met with, as the reward of the arduous labours of four years. These I cannot but feel were unjust, particularly as they were carried on without any hearing whatever, and even without any examination of the results, or any inquiry relative to the extent of the duties, or the manner in which they had been performed. This, however, is not the place to speak of these things.

I had, at an early day after my appointment, assigned the 10th of August as the time for our departure, and had assured the President that at that time I should be ready, and would sail; but that it was entirely impossible for me to

fix an earlier day. I feel much satisfaction in reflecting on the confidence the President and Secretary placed in me. It was fully appreciated. The exertions of all were bent to fulfil this pledge, although almost all those connected with the enterprise doubted the possibility of getting off so soon. Every thing, however, was completed, and I left Washington on the 10th of August.

On my arrival at Norfolk, I found every thing in a state of forwardness, and the Squadron in Hampton Roads, whither they had dropped down on the 8th of August. The names of the pilot-boats were now changed to the Sea-Gull and Flying-Fish, as had been agreed upon with Mr. Paulding; and they were placed under command of Passed Midshipmen Reid and Knox.

I was well aware, from my own observations and the reports made to me, that we were any thing but well equipped for such a cruise. But whatever our defects were, it was now entirely too late to remedy them. The great anxiety of the government to have us get to sea, after the vexatious delays that had before occurred in the sailing of the Expedition, disappointing the honest expectations of the whole country, and particularly the depressing effect any further delay would produce on the spirits and ardour of the officers and men, made me come to the resolution to put to sea at all hazards, and endeavour to remedy the defects as much as possible within our own means, or on our arrival at places where it could be done effectually.

Before sailing from Hampton Roads, the internal rules and regulations for the government of the Squadron were issued, in order to make the terms of duties more uniform, and that in case of transfer of men and officers during the cruise, from one vessel to another, no one could be at a loss to know the duties he had to perform. These continued without any material change to be rigidly enforced throughout the cruise. Signal-books were also arranged to supply the defective ones that are furnished the navy.

I was called upon, in a few cases, to exercise the means in my possession to punish aggressions. Yet my aim has been throughout the cruise, so to conduct the duties devolving upon the Squadron, that it would carry with it the force of moral principle. All the regulations and operations were made to tend to this end. I considered this as one of my first duties, and in it I have been well supported by Captain Hudson and Lieutenant-Commandant Ringgold, and by most of the officers of the Expedition. I feel great satisfaction in having received testimonials from the different missionaries, that my course has been fully appreciated by them. Indeed, I have reason to rejoice that I have been enabled

to carry the moral influence of our country to every quarter of the globe where our flag has waved, and I trust that the Expedition will compare advantageously with any other that has preceded it, in its moral and correct deportment.

CHARLES WILKES.

Washington City,
November, 1844.

INSTRUCTIONS.

Navy Department,
August 11th, 1838.

SIR,—

The Congress of the United States, having in view the important interests of our commerce embarked in the whale-fisheries, and other adventures in the great Southern Ocean, by an act of the 18th of May, 1836, authorized an Expedition to be fitted out for the purpose of exploring and surveying that sea, as well to determine the existence of all doubtful islands and shoals, as to discover and accurately fix the position of those which lie in or near the track of our vessels in that quarter, and may have escaped the observation of scientific navigators. Liberal appropriations have been made for the attainment of these objects, and the President, reposing great confidence in your courage, capacity, and zeal, has appointed you to the command of the Expedition, requiring you to proceed to the performance of the duties of that station with the vessels placed under your orders, consisting of the sloops of war Vincennes and Peacock, the ship Relief, the brig Porpoise, and tenders Sea-Gull and Flying-Fish.

As soon as these vessels are in every respect ready, you will accordingly take your departure from Norfolk, and shape your course to Rio Janeiro, crossing the line between longitude 18° and 22° W., and keeping within those meridians to about latitude 10° S., with a view to determine the existence of certain *vigias* or shoals laid down in the charts as doubtful, and whose position, should they be found to exist, it is deemed useful to the interests of our commerce to ascertain.

At Rio Janeiro, you will replenish your supplies, taking special care to furnish yourself with a sufficiency of all those articles which are considered the

best preventives and remedies for the scurvy. You will determine the longitude of that place, as well as of Cape Frio; after which, you will either detach a vessel, or proceed with your whole squadron, to make a particular examination of Rio Negro, which falls into the South Atlantic about latitude 41° S., with a view to ascertain its resources and facilities for trade.

Having completed this survey, you will proceed to a safe port or ports in Terra del Fuego, where the members of the scientific corps may have favourable opportunities of prosecuting their researches. Leaving the larger vessels securely moored, and the officers and crews occupied in their respective duties, you will proceed with the brig Porpoise, and the tenders, to explore the southern Antarctic, to the southward of Powell's Group, and between it and Sandwich Land, following the track of Weddell as closely as practicable, and endeavouring to reach a high southern latitude; taking care, however, not to be obliged to pass the winter there, and to rejoin the other vessels between the middle of February and beginning of March. The attention of the officers left at Terra del Fuego, will, in the mean time, be specially directed to making such accurate and particular examinations and surveys of the bays, ports, inlets, and sounds, in that region, as may verify or extend those of Captain King, and be serviceable in future to vessels engaged in the whale-fisheries, in their outward and homeward-bound passages.

You will then, on rejoining the vessels at Terra del Fuego, with all your squadron, stretch towards the southward and westward as far as the Ne Plus Ultra of Cook, or longitude 105° W., and return northward to Valparaiso, where a store-ship will meet you in the month of March, 1839. Proceeding once more from that port, you will direct your course to the Navigator's Group, keeping to the southward of the place of departure, in order to verify, if possible, the existence of certain islands and shoals, laid down in the charts as doubtful, and if they exist, to determine their precise position, as well as that of all others which may be discovered in this unfrequented track. When you arrive in those latitudes where discoveries may be reasonably anticipated, you will so dispose your vessels as that they shall sweep the broadest expanse of the ocean that may be practicable, without danger of parting company, lying-to at night in order to avoid the chance of passing any small island or shoal without detection.

It is presumed you will reach the Navigator's Group some time in June, 1839. You will survey this group, and its harbours, with all due care and attention. If time will permit, it will be well to visit the Society Islands, and examine Eimeo, which, it is stated, possesses a convenient harbour.

From the Navigator's Group, you will proceed to the Feejee Islands, which you will examine with particular attention, with the view to the selection of a safe harbour, easy of access, and in every respect adapted to the reception of vessels of the United States engaged in the whale-fishery, and the general commerce of these seas; it being the intention of the government to keep one of the squadron of the Pacific cruising near these islands in future.

After selecting the island and harbour best adapted to the purposes in view, you will use your endeavours to make such arrangements as will insure a supply of fruits, vegetables, and fresh provisions, to vessels visiting it hereafter, teaching the natives the modes of cultivation, and encouraging them to raise hogs in greater abundance.

These objects will, it is presumed, occupy you until the latter end of October; and when attained as far as may be possible, you will proceed to the port of Sydney, where adequate supplies may be obtained. From thence you will make a second attempt to penetrate within the Antarctic region, south of Van Diemen's Land, and as far west as longitude 45° E., or to Enderby's Land, making your rendezvous on your return at Kerguelen's Land, or the Isle of Desolation, as it is now usually denominated, and where you will probably arrive by the latter end of March, 1840.

From the Isle of Desolation you will proceed to the Sandwich Islands, by such route as you may judge best, from the information you may acquire from such sources as fall in your way.

A store-ship from the United States will meet you there, with a supply of provisions, in the month of April, 1840.

Thence you will direct your course to the Northwest Coast of America, making such surveys and examinations, first of the territory of the United States on the seaboard, and of the Columbia river, and afterwards along the coast of California, with special reference to the Bay of St. Francisco, as you can accomplish by the month of October following your arrival.

You will then proceed to the coast of Japan, taking in your route as many doubtful islands as possible; and you have permission to pass through the Straits of Sangar into the Sea of Japan, where you may spend as much time as is compatible with your arrival at the proper season in the Sea of Sooloo or Mindoro.

Of this sea you will make a particular examination, with a view to ascertain whether there is any safe route through it, which will shorten the passage of our vessels to and from China.

It is enjoined on you to pay very particular attention to this object, in order that you may be enabled to furnish sailing instructions to navigators. It may be also advisable to ascertain the disposition of the inhabitants of the islands of this archipelago for commerce, their productions and resources.

Having completed this survey, you will proceed to the Straits of Sunda, pass through the Straits of Billiton, which you will examine, and thence to the port of Singapore, where it is probable you may arrive about the beginning of April, 1841, and where you will meet a store-ship from the United States.

Having completed this service, it is presumed the objects of your enterprise will be accomplished, and you will accordingly, after receiving your supplies at Singapore, return to the United States by the Cape of Good Hope, taking such a course as may be most likely to further the great purposes of the Expedition.

During your stay in the southern latitudes, should the dysentery or any

other fatal epidemic make its appearance among your crews, you have leave to proceed to the northward, until the disease shall either disappear, or be so mitigated, as to admit of the resumption of your surveys.

The Department does not feel the necessity of giving any special directions for preserving the health of those under your command, confiding in your own experience, the care and precautions of the able surgeons with whom you are provided, and in the conviction you must feel, that on the health of your crews must depend the success of the enterprise.

In the prosecution of these long and devious voyages, you will necessarily be placed in situations which cannot be anticipated, and in which, sometimes your own judgment and discretion, at others, necessity, must be your guide. Among savage nations, unacquainted with, or possessing but vague ideas of the rights of property, the most common cause of collision with civilized visiters, is the offence and the punishment of theft. You will therefore adopt every possible precaution against this practice, and in the recovery of the stolen property, as well as in punishing the offender, use all due moderation and forbearance.

You will permit no trade to be carried on by the squadron, with the countries you may visit, either civilized or savage, except for necessaries or curiosities, and that under express regulations established by yourself, in which the rights of the natives must be scrupulously respected and carefully guarded.

You will neither interfere, nor permit any wanton interference with the customs, habits, manners, or prejudices, of the natives of such countries or islands as you may visit; nor take part in their disputes, except as a mediator; nor commit any act of hostility, unless in self-defence, or to protect or secure the property of those under your command, or whom circumstances may have placed within reach of your protection.

You will carefully inculcate on all the officers and men under your command, that courtesy and kindness towards the natives, which is understood and felt by all classes of mankind; to display neither arrogance nor contempt, and to appeal to their good-will rather than their fears, until it shall become apparent that they can only be restrained from violence by fear or force.

You will, on all occasions, avoid risking the officers and men unnecessarily on shore at the mercy of the natives. Treachery is one of the invariable characteristics of savages and barbarians; and very many of the fatal disasters which have befallen preceding navigators, have arisen from too great a reliance on savage professions of friendship, or overweening confidence in themselves.

Much of the character of our future intercourse with the natives of the lands you may visit, will depend on the impressions made on their minds by their first intercourse with your vessels.

It is the nature of the savage, long to remember benefits, and never to forget injuries; and you will use your best endeavours wherever you may go, to leave behind a favourable impression of your country and countrymen. The Expedition is not for conquest, but discovery. Its objects are all peaceful; they are to extend the empire of commerce and science; to diminish the hazards of the

ocean, and point out to future navigators a course by which they may avoid dangers and find safety.

An Expedition so constituted, and for such purposes, armed for defence, not conquest, and engaged in pursuits in which all enlightened nations are equally interested, has a right to expect the good-will and good offices of the whole civilized world. Should our country, therefore, be unhappily involved in war during your absence, you will refrain from all acts of hostility whatever, as it is confidently believed none will be committed against you. So far from this being the case, it is not to be doubted that even hostile nations will respect your purposes, and afford every facility to their accomplishment.

Finally, you will recollect, that though you may frequently be carried beyond the sphere of social life, and the restraints of law, yet that the obligations of justice and humanity are always and every where equally imperative in our intercourse with men, and most especially savages; that we seek them, not they us; and that if we expect to derive advantages from the intercourse, we should endeavour to confer benefits in return.

Although the primary object of the Expedition is the promotion of the great interests of commerce and navigation, yet you will take all occasions, not incompatible with the great purposes of your undertaking, to extend the bounds of science, and promote the acquisition of knowledge. For the more successful attainment of these, a corps of scientific gentlemen, consisting of the following persons, will accompany the Expedition, and are placed under your direction.

Mr. Hale, Philologist.
Mr. Pickering, } Naturalists.
Mr. Peale, }
Mr. Couthouy, Conchologist.
Mr. Dana, Mineralogist.
Mr. Rich, Botanist.
Mr. Drayton, } Draughtsmen.
Mr. Agate, }
Mr. Brackenridge, Horticulturist.

The hydrography and geography of the various seas and countries you may visit in the route pointed out to you in the preceding instructions, will occupy your special attention; and all the researches connected with them, as well as with astronomy, terrestrial magnetism, and meteorology, are confided exclusively to the officers of the navy, on whose zeal and talents the Department confidently relies for such results as will enable future navigators to pass over the track traversed by your vessels, without fear and without danger.

No special directions are thought necessary in regard to the mode of conducting the scientific researches and experiments which you are enjoined to prosecute, nor is it intended to limit the members of the corps each to his own particular service. All are expected to co-operate harmoniously in those

kindred pursuits, whose equal dignity and usefulness should insure equal ardour and industry in extending their bounds and verifying their principles.

As guides to yourself and to the scientific corps, the Department would, however, direct your particular attention to the learned and comprehensive Reports of a committee of the American Philosophical Society of Philadelphia, the Report of a Committee of the East India Marine Society, of Salem, Massachusetts; and to a communication from the Naval Lyceum of New York, which accompany, and are to be regarded as forming a part of these instructions, so far as they may accord with the primary objects of the Expedition, and its present organization. You will, therefore, allow the gentlemen of the scientific corps the free perusal of these valuable documents, and permit them to copy such portions as they may think proper.

The Russian Vice-Admiral Krusenstern, has transmitted to the Department memorandums relating to the objects of this Expedition, together with the most improved charts of his atlas of the Pacific Ocean, with explanations, in three volumes. These are also confided to your care; and it is not doubted that the friendly contributions of this distinguished navigator will essentially contribute to the success of an enterprise in which he takes so deep an interest.

You will prohibit all those under your command from furnishing any persons not belonging to the Expedition, with copies of any journal, charts, plan, memorandum, specimen, drawing, painting, or information of any kind, which has reference to the objects or proceedings of the Expedition.

It being considered highly important that no journal of these voyages, either partial or complete, should be published, without the authority and under the supervision of the government of the United States, at whose expense this Expedition is undertaken, you will, before you reach the waters of the United States, require from every person under your command the surrender of all journals, memorandums, remarks, writings, drawings, sketches, and paintings, as well as all specimens of every kind, collected or prepared during your absence from the United States.

After causing correct inventories of these to be made and signed by two commissioned officers, and by the parties by whom they were collected or prepared, you will cause them to be carefully sealed by the said officers, and reserved for such disposition as the Department may direct.

You will adopt the most effectual measures to prepare and preserve all specimens of natural history that may be collected, and should any opportunities occur for sending home by a vessel of war of the United States, copies of information, or duplicates of specimens, or any other material you may deem it important to preserve from the reach of future accident, you will avail yourself of the occasion, forwarding as frequently as may be done with safety, details of your voyage and its most material events, at the same time strictly prohibiting all communications except to this Department, from any person attached to the Expedition, referring to discoveries, or any circumstances connected with the progress of your enterprise.

It is believed that the officers under your command require no special advice or direction from this Department. Bearing in mind, as they no doubt will, that the undertaking which they are about assisting to accomplish, is one that necessarily attracts the attention of the civilized world, and that the honour and interests of their country are equally involved in its results, it is not for a moment doubted that in this, as on all other occasions, they will so conduct themselves, as to add to the reputation our navy has so justly acquired at home and abroad.

With the best wishes for the success of the Expedition, and the safe return of yourself and your companions,

I am, very respectfully,

(Signed) J. K. Paulding.

To Lieutenant Charles Wilkes,
Commanding the Exploring and Surveying Expedition, &c.

P. S. The accompanying printed list of English words, drawn up by Mr. Gallatin, and received from the War Department since these instructions were prepared, are intended for Indian vocabularies, which can be filled up as circumstances permit, taking care that the same words be used in all of them.

(Signed) J. K. Paulding.

LIST OF OFFICERS AND MEN

ATTACHED TO

THE UNITED STATES EXPLORING EXPEDITION.

UNITED STATES SHIP VINCENNES.

Charles Wilkes, Esq.,	Commanding Exploring Expedition.	
Thomas T. Craven,	Lieutenant.	Left at Valparaiso June 6th, 1839, to take command of the Sea-Gull.
Overton Carr,	Lieutenant.	Took command of brig Oregon, at San Francisco, October, 1841.
Robert E. Johnson,	Lieutenant.	Commanded Sea-Gull on her Southern Cruise, detached at Honolulu, November, 1841.
James Alden,	Lieutenant.	Joined brig Porpoise at San Francisco, October, 1841.
William L. Maury,	Lieutenant.	Joined Peacock at Orange Bay, and Porpoise at Callao.
James H. North,	Acting Master.	Joined Porpoise at Callao.
Edward Gilchrist,	Acting Surgeon.	Detached at Sydney, March, 1840.
R. R. Waldron,	Purser.	
J. L. Elliott,	Chaplain.	Detached at San Francisco, October, 1841.
J. L. Fox,	Assistant Surg.	Joined Porpoise at San Francisco, October, 1841.
J. S. Whittle,	Assistant Surg.	Joined Peacock at Honolulu, and Vincennes again at San Francisco.
George M. Totten,	Passed Mid.	Joined Porpoise at Callao, and Vincennes at Honolulu.
William Reynolds,	Passed Mid.	Joined Peacock, 1839, and Flying-Fish at Honolulu, 1840, and Porpoise at Singapore.
William May,	Passed Mid.	Joined Flying-Fish on a cruise south, 1839-'40, and Vincennes again, May, 1840.

Joseph P. Sandford,	Passed Mid.	Joined Porpoise at Tahiti, schooner Flying-Fish at San Francisco, and Porpoise at Singapore.
George W. Clark,	Midshipman.	Joined Peacock at Tahiti, and Vincennes again at San Francisco.
Samuel Elliott,	Midshipman.	
William Smith,	Boatswain.	
Washington Bright,	Gunner.	Joined Relief at Callao.
William M. Laighton,	Carpenter.	Joined Relief at Callao.
Samuel N. Hawkins,	Sailmaker.	
Benj. Vanderford,	Pilot.	Died, April, 1842.
R. P. Robinson,	Purser's Steward.	
John G. Williamson,	Gunner.	

SCIENTIFIC CORPS.

Charles Pickering,	Naturalist.	
Joseph Drayton,	Artist.	
J. D. Brackenridge,	Assistant Botanist.	
John G. Brown,	Mathematical Instrument Maker.	
John W. W. Dyes,	Assistant Taxidermist.	
Joseph P. Couthouy,	Naturalist.	Left at Sydney, and detached at Honolulu, November, 1840.

UNITED STATES SHIP PEACOCK.

WRECKED JULY 18TH, 1841.

William L. Hudson, Esq.,	Commanding.	Joined Vincennes at San Francisco.
Samuel P. Lee,	Lieutenant.	Detached at Orange Bay, Feb. 1839.
W. M. Walker,	Lieutenant.	Commanded Flying-Fish first cruise, joined Porpoise at Columbia river, and Vincennes at San Francisco.
George F. Emmons,	Lieutenant.	Joined Vincennes at San Francisco.
O. H. Perry,	Lieutenant.	Joined Vincennes at San Francisco.
Thomas A. Budd,	Acting Master.	Joined Vincennes at Feejee.
J. F. Sickles,	Surgeon.	Joined Relief at Callao.
William Spieden,	Purser.	Joined Oregon at Columbia River.
Silas Holmes,	Assistant Surg.	Joined Porpoise at Sydney, and Oregon at San Francisco.
James B. Lewis,	Passed Mid.	Joined Flying-Fish at Feejee, returned home from Oahu sick.
Henry Gansevoort,	Passed Mid.	Detached at Callao, 1839.
Henry Eld,	Passed Mid.	Joined Vincennes at Feejee.
George W. Harrison,	Passed Mid.	Joined Flying-Fish on cruise south, Peacock at Feejee, and Oregon at Columbia River.
Wilkes Henry,	Midshipman.	Joined Vincennes at Callao, killed, July 24th, 1840, at Malolo.
William H. Hudson	Midshipman.	Joined Vincennes at Columbia river.

Frederick D. Stuart,	Captain's Clerk.	Joined Porpoise at Columbia river, and Vincennes at San Francisco.
Thomas G. Bell,	Boatswain.	Joined Porpoise at Columbia river, and Oregon at San Francisco.
John D. Anderson,	Gunner.	Detached at Callao.
Jonas Dibble,	Carpenter.	Joined Oregon at Columbia river.
J. D. Freeman,	Sailmaker.	Joined Porpoise at Columbia river.
William H. Insley,	Purser's Steward.	Detached at Callao.

SCIENTIFIC CORPS.

James D. Dana,	Mineralogist.	Joined Vincennes at San Francisco.
T. R. Peale,	Naturalist.	Joined Vincennes at San Francisco.
Horatio Hale,	Philologist.	Joined Vincennes at New Zealand, Peacock at Honolulu, and was left at Oregon to cross the country.
F. L. Davenport,	Interpreter.	Detached at Rio.

UNITED STATES SHIP RELIEF.

SENT HOME FROM CALLAO, BY WAY OF SANDWICH ISLANDS AND SYDNEY.

A. K. Long,	Lieutenant-Commandant.	
R. F. Pinkney,	Lieutenant.	Joined Peacock at Orange Bay, Flying-Fish at Callao, and detached at Honolulu, 1840.
A. L. Case,	Lieutenant.	Joined Vincennes at Callao.
Joseph A. Underwood,	Lieutenant.	Joined Vincennes at Callao, and killed at Malolo, July 24th, 1840.
George T. Sinclair,	Acting Master.	Joined Porpoise at Callao; Commander Flying-Fish at Feejee; joined Porpoise again at Honolulu, November, 1840.
J. C. Palmer,	Acting Surgeon.	Joined Peacock at Callao, and Oregon at Columbia river, and Vincennes at San Francisco.
Alonzo B. Davis,	Passed Mid.	Joined Peacock at Callao, and Vincennes at Columbia river, and Oregon at San Francisco.
Thomas W. Cummings,	Passed Mid.	Left sick at Rio.
James L. Blair,	Midshipman.	Joined Peacock at Rio, schooner Flying-Fish at Columbia river, and Vincennes at Honolulu.
James R. Howison,	Captain's Clerk.	Joined Vincennes at Callao.
J. Black,	Boatswain.	
Thomas Lewis,	Gunner.	Joined Peacock at Callao, and Oregon at Columbia river.

SCIENTIFIC CORPS.

William Rich,	Botanist.	Joined Peacock at Callao, and Vincennes at San Francisco.

Alfred T. Agate,	Artist.	Joined Peacock at Callao, and Vincennes at San Francisco.

UNITED STATES BRIG PORPOISE.

Cadwalader Ringgold,	Lieutenant-Commandant.	
M. G. L. Claiborne,	Lieutenant.	Joined Relief at Orange Bay.
H. J. Hartstein,	Lieutenant.	Joined Relief at Callao.
John B. Dale,	Lieutenant.	Joined Relief at Callao.
A. S. Baldwin,	Acting Master.	Joined Peacock at Callao, and Oregon at Columbia river.
C. F. B. Guillou,	Assistant Surg.	Joined Peacock at Sydney, Flying-Fish at Columbia river, and detached at Honolulu, November, 1841.
Simon F. Blunt,	Passed Mid.	Joined Vincennes at Orange Bay, and left sick at Honolulu, in April, 1841.
Geo. W. Colvocoressis,	Passed Mid.	Joined Peacock at Rio, Vincennes at Feejee, and Oregon at San Francisco.
Thomas W. Waldron,	Captain's Clerk.	
O. Nelson,	Boatswain.	Detached at Rio.
Amos Chick,	Carpenter.	Joined Vincennes at Callao.
John Joines,	Sailmaker.	Detached at Callao; joined Relief.
William H. Morse,	Purser's Steward.	
John Frost,	Boatswain.	

TENDER SEA-GULL.

LOST ABOUT MAY 1ST, 1839.

James W. E. Reid,	Passed Midshipman, Commandant.	
Frederick A. Bacon,	Passed Mid.	
Isaac Percival,	Pilot.	Joined Relief at Callao.

TENDER FLYING-FISH.

SOLD AT SINGAPORE.

Samuel R. Knox,	Commandant.	Commanding schooner most of the cruise; joined Vincennes at Singapore.
George W. Hammersly,	Midshipman.	Joined Peacock at Callao, and Vincennes at Feejee.
Richard Ellice,	Ac. Master's Mate.	Detached; joined Relief at Rio.
H. A. Clemson,	Midshipman.	Joined the Vincennes at Rio; detached at Callao.
Egbert Thompson,	Midshipman.	Joined Vincennes at Rio, Peacock at Feejee, and Vincennes again at Columbia river.
A. M. Cesney,	Master's Mate.	Detached at Honolulu.
E. H. De Haven,	Acting Master.	Joined Vincennes at Callao, Peacock at Feejee, and Oregon at Columbia river.
James S. Power,	Purser's Steward.	Joined Peacock at Callao, and Oregon at Columbia river.

John Anderson,	Seaman.	Joined in the United States; returned, expiration of cruise.
Joseph R. Atkins,	Ord'y Seaman.	Joined at Sydney; served to end of the cruise.
Charles Allen,	Ord'y Seaman.	Joined at Oahu; served to the end of the cruise.
Stephen F. Angell,	Seaman.	Joined at Oahu; run at Oahu.
Joseph C. Allen,	Ord'y Seaman.	Joined at Oahu; run at Hawaii.
Jean Antonia,	Ord'y Seaman.	Joined at Cape Town; served to the end of the cruise.
Joseph Allshouse,	Private.	Joined in the United States; died October 30th, 1841.
James Anderson,	Ord'y Seaman.	Joined at Callao; served the cruise.
John Anderson,	Seaman.	Joined at Callao; killed by the natives at Drummond Island.
James Allman,	Private.	Joined in the United States; served the cruise.
Silas Atkins,	Seaman.	Joined in the United States; returned in the Relief.
Peter Ackerman,	Seaman.	Joined in the United States; served the cruise.
John Ayres,	Landsman.	Joined at Callao; run at Sydney.
Charles Adams,	Cooper.	Joined at Oahu; served the cruise.
John Brown, 1st,	Seaman,	Joined in the United States; served the cruise.
Robert Boyle,	Seaman.	Joined in the United States; run at Sydney.
Henry Buckett,	Quarter Master.	Joined in the United States; discharged at Sydney.
John Brooks,	Seaman.	Joined in the United States; served the cruise.
Henry Batchelor,	Seaman.	Joined in the United States; served the cruise.
John Black,	Boatsn's Mate.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Henry Blackstone,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Franklin Brown,	Ord'y Seaman.	Joined in the United States; served the cruise.
David Banks,	Ord'y Seaman.	Joined in the United States; discharged at Rio, Dec. 31st, 1838.
Peter Brown,	Ord'y Seaman.	Joined at Rio; run at Upolu, Nov. 10th, 1839.
David Bartlett,	Seaman.	Joined at Rio; served the cruise.
John Brown, 2d,	1st Class Boy.	Joined at Rio; run at Sydney, Dec. 31st, 1839.
John L. Blake,	Ord'y Seaman.	Joined at Rio; discharged June 30th, 1840.
John Bremot,	Ord'y Seaman.	Joined at Rio; run at Callao, July 13th, 1839.

John Buckley,	Officers' Steward.	Joined at Valparaiso; discharged at Callao, June, 1839.
Frederick Beale,	Ord'y Seaman.	Joined at Sydney; run at New Zealand.
Andrew A. Brown,	Ord'y Seaman.	Joined at New Zealand; served the cruise.
Shelden Benedict,	Qr. Gunner.	Joined at New Zealand; served the cruise.
John Bartholomew,	Ord'y Seaman.	Joined at Oahu; run at Oahu, Nov. 26th, 1841.
John A. Brown,	Landsman.	Joined at Oahu; served the cruise.
Ebenezer Bartholomew,	Ord'y Seaman.	Joined at Maui; served the cruise.
Derby Batchelor,	Ord'y Seaman.	Joined at Maui; run at Oahu, Nov. 26th, 1841.
David Bateman,	Private.	Joined in the United States; died at Feejee Islands, June 30th, 1840.
Richard Brothers,	Seaman.	Joined in the United States; sent home from Rio, sick.
James Brown,	Carpenter's Mate.	Joined in the United States; served the cruise.
Joseph Bass,	Ord'y Seaman.	Joined in the United States; served the cruise.
James Berry,	Seaman.	Joined at Rio; served the cruise.
John Baptiste,	Seaman.	Joined at Valparaiso; served the cruise.
John W. Boyson,	1st Class Boy.	Joined at the Feejee Islands; run at Oahu.
John F. Brown,	Seaman.	Joined at Oahu; served the cruise.
Robert C. Bernard,	Quarter Master.	Joined at Valparaiso; served the cruise.
Alexander Bowman,	Seaman.	Joined at Oahu; run at Singapore.
Samuel Brown,	Capt. Forecastle.	Joined in the United States; discharged at Oahu, Nov. 2d, 1840.
William Brown, 2d,	Ord'y Seaman.	Joined in the United States; run at Rio.
Alexander Barron,	Ord'y Seaman.	Joined in the United States; discharged at Oahu, Nov. 2d, 1840.
Peter Bowen,	Seaman.	Joined at Rio; run at Valparaiso.
Walston Bradley,	Ord'y Seaman.	Joined at Valparaiso; run at Callao.
William Bruce,	Ord'y Seaman.	Joined at Valparaiso; run at Sydney.
Davy Beal,	Landsman.	Joined at Callao; left sick in charge of Consul at Sydney.
John Brookins,	Ord'y Seaman.	Joined at Upolu; served the cruise.
Artimeus W. Beals,	Capt. Hold.	Joined at Upolu; served the cruise.
William Bostwick,	Capt. Cook.	Joined in the United States; served the cruise.
Theodore Beton,	Ord'y Seaman.	Joined at Rio; served the cruise.
Robert Brown,	Boatsn's Mate.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
William Brisco,	Armourer.	Joined in the United States; served the cruise.
Charles Berry,	Mast. Arms.	Joined in the United States; returned in Relief.
David Burns,	Officers' Cook.	Joined in the United States; returned in Relief.

John B. Brown,	Seaman.	Joined in the United States; returned in Relief.
Joseph Brimblecomb,	Seaman.	Joined in the United States; returned in Relief.
Patrick Boyle,	1st Class Boy.	Joined in the United States; run at Rio.
Thomas Burke,	Private.	Joined in the United States; served the cruise.
Philip Babb,	Private.	Joined in the United States; served the cruise.
George Butter,	Officers' Cook.	Joined in the United States; served the cruise.
David Blodget,	Officers' Cook.	Joined in the United States; died at Navigator's Islands, Nov. 6th, 1839.
Jacob Bolin,	Capt. Forecastle.	Joined in the United States; served the cruise.
Francis Baker,	Ord'y Seaman.	Joined in the United States; served the cruise.
Henry Bingham,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Garret Cole,	Ord'y Seaman.	Joined in the United States; served the cruise.
W. H. Cummings,	Boatsn's Mate.	Joined in the United States; served the cruise.
Mason Crowell,	Landsman.	Joined in the United States; served the cruise.
John Cooper,	Armourer.	Joined in the United States; served the cruise.
James Cummings,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Isaac Carmey,	1st Class Boy.	Joined in the United States; served the cruise.
Charles J. Colson,	Hosp. Steward.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Daniel Clute,	Quarter-Master.	Joined in the United States; lost in the Sea-Gull.
Roswell Cann,	1st Class Boy.	Joined in the United States; lost in the Sea-Gull.
James Corse,	Seaman.	Joined at Rio; sent home in Relief.
William Clark,	Ord'y Seaman.	Joined at Sydney; served out the cruise.
Ezekiel Cooper,	Ord'y Seaman.	Joined at Oahu; run, same place.
Jasper Cropsey,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Tom Coffin,	Seaman.	Joined at Oahu; run at Hawaii.
George Croker,	Ord'y Seaman.	Joined at Hawaii; run at Oahu.
David Cropsey,	Ord'y Seaman.	Joined at Maui; served the cruise.
George Case,	Seaman.	Joined at Oahu; served the cruise.
Ephraim Coffin,	Ord'y Seaman.	Joined at Oahu; discharged at California.
Joseph Clark,	Corp'l Marines.	Joined in the United States; served the cruise.
Robert Campbell,	Private.	Joined in the United States; served the cruise.

Lawrence Cavenaugh,	Private.	Joined in the United States; served the cruise.
Joseph Clark,	Seaman.	Joined in the United States; served the cruise.
Isaac Cook,	Ord'y Seaman.	Joined in the United States; served the cruise.
John H. Cole,	Capt. Top.	Joined in the United States; discharged at Oahu, 2d November, 1840.
Charles Clifford,	Capt. Top.	Joined in the United States; discharged at Oahu, 2d November, 1840.
Paul Camell,	Officers' Steward.	Joined at Valparaiso; run at Sydney.
Charles Chancy,	Ord'y Seaman.	Joined at Callao; run at Sydney.
James Cunningham,	Ord'y Seaman.	Joined at Callao; run at Tahiti.
Richard Cooper,	Ord'y Seaman.	Joined at Upolu; run at Sydney.
Levin Clark,	Capt. Top.	Joined in the United States; served the cruise.
Gaylord P. Churchill,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Joshua Cary,	Private.	Joined in the United States; run at Rio.
James Crontu,	Ord'y Seaman.	Joined in the United States; run at Sydney.
Joseph Crosby,	Carpenter's Mate.	Joined in the United States; returned in Relief.
Alfred Cassedy,	Ord'y Seaman.	Joined in the United States; run at Callao.
William Clegg,	Ord'y Seaman.	Joined in the United States; returned in Relief.
John Cook,	Seaman.	Joined in the United States; returned in Relief.
William Carter,	Capt. Top.	Joined in the United States; served the cruise.
John Cook,	Boatsn's Mate.	Joined in the United States; served the cruise.
Charles Chapman,	Capt. Top.	Joined at Callao; served the cruise.
James Coburn,	Ord'y Seaman.	Joined at New Zealand; served the cruise.
George Cook,	2d Class Boy.	Joined at Oahu; discharged same place, November 19th, 1841.
Valentine Dister,	Ord'y Seaman.	Joined in the United States; transferred to Independence, at Rio.
Jerome Davis,	Ord'y Seaman.	Joined in the United States; served the cruise.
John Doughty,	Capt. Top.	Joined in the United States; served the cruise.
John Demock,	Capt. Top.	Joined in the United States; served the cruise.
John Dismond,	Seaman.	Joined in the United States; served the cruise.
James Dunn,	Officers' Steward.	Joined in the United States; served the cruise.
Alexander Dunn,	Cockswain.	Joined in the United States; discharged at Rio, November 30th, 1838.

John W. Divin,	Ord'y Seaman.	Joined at Rio; run at Sydney.
Christian Dobleman,	Master-at-Arms.	Joined in the United States; served the cruise.
James Daniels,	Ord'y Seaman.	Joined at Sydney; run at New Zealand.
James Dowling, 1st,	Seaman.	Joined at Sydney; run at New Zealand.
John N. Dean,	Ord'y Seaman.	Joined at Sydney; served the cruise.
John E. Day,	Landsman.	Joined at New Zealand; served out the cruise.
John Davis, 1st,	1st Class Boy.	Joined at New Zealand; run at Oahu.
Harvey Dean,	Ord'y Seaman.	Joined at Oahu; run at Singapore.
John Davis, 2d,	Seaman,	Joined at Oahu; run at Hawaii.
James Dowling, 2d,	Landsman.	Joined at Oahu; served the cruise.
Charles Duegen,	Seaman.	Joined at Rio; returned in Relief.
John Disbrow,	Private.	Joined in the United States; served the cruise.
Addison Dunbar,	Private.	Joined in the United States; served the cruise.
William Dammon,	Ord'y Seaman.	Joined at Callao; served the cruise.
George Daily,	Ord'y Seaman.	Joined at Oahu; served the cruise.
William Daily,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Stephen W. Days,	Hosp. Steward.	Joined in the United States; served the cruise.
Solomon Disney,	Sailmaker's Mate.	Joined in the United States; served the cruise.
Joseph Dolevar,	Seaman.	Joined at Valparaiso; served the cruise.
Thomas Dewees,	Corporal.	Joined in the United States; served the cruise.
Thomas Derling,	Ord'y Seaman.	Joined at Valparaiso; run at Oahu.
Samuel Dinsman,	Seaman.	Joined in the United States; returned in the Relief.
Joseph De Silva,	1st Class Boy.	Joined at Rio; transferred to Falmouth at Callao.
Samuel Dinsman,	Corp'l Marines.	Joined in the United States; served the cruise.
David Dalton,	Officers' Steward.	Joined in the United States; served the cruise.
Thomas Dickenson,	Carpenter's Mate.	Joined in the United States; served the cruise.
William Dillon,	Ord'y Seaman.	Joined at Sydney; run at Oahu.
James Derley,	Seaman.	Joined at Oahu; served the cruise.
Charles Erskin,	Ord'y Seaman.	Joined in the United States; served the cruise.
George Elliott,	1st Class Boy.	Joined at Valparaiso; served the cruise.
W. H. Eldridge,	Ord'y Seaman.	Joined at Cape Town; served the cruise.
Henry Evans,	Officers' Cook.	Joined in the United States; run at Fort George, Columbia River.
Samuel Eastman,	Quarter-Master.	Joined in the United States; discharged at Oahu, October 31st, 1840.

William Eastwood,	Ord'y Seaman.	Joined in the United States; served the cruise.
James Elliotte,	Gunner's Mate.	Joined in the United States; sent home in the Relief.
William Frazier,	Seaman.	Joined in the United States; run at Sydney.
John Fenno,	Seaman.	Joined in the United States; served out the cruise.
Henry A. Felson,	Ord'y Seaman.	Joined in the United States; served out the cruise.
William Forsdick,	Ord'y Seaman.	Joined in the United States; run at Oahu, Oct. 31st, 1840.
John Fisk,	Ord'y Seaman.	Joined at Rio; served out the cruise.
Thomas Ford,	Ord'y Seaman.	Joined at Rio; served out the cruise.
William Frazier, 2d,	Ord'y Seaman.	Joined at Rio; lost in the Sea-Gull.
Edward Fox,	Officers' Steward.	Joined at Sydney; discharged at Oahu.
Frederick Friends,	Ord'y Seaman.	Joined at Oahu; served out the cruise.
Matthew Francisco,	Ord'y Seaman.	Joined at Oahu; discharged same place.
Alexander C. Fowler,	Seaman.	Joined in the United States; served out the cruise.
John Francis,	Ord'y Seaman.	Joined in the United States; run at Rio.
James Fritz,	Qr. Gunner.	Joined at Rio; served the cruise.
Stephen Fosdick,	Gunner's Mate.	Joined in the United States; served the cruise.
Robert Furman,	Ord'y Seaman.	Joined in the United States; discharged at Oahu, 31st Oct. 1840.
Theodore French,	Ship's Cook.	Joined in the United States; discharged 5th August, 1839.
Kinnard Foreman,	Sailmaker's Mate.	Joined at Callao; returned to United States in the Relief.
Isaac Frietus,	Ord'y Seaman.	Joined at Madeira; discharged March 31st, 1840.
Robert Fletcher,	Ord'y Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Vincent Frietus,	2d Class Boy.	Joined at Rio; run at Valparaiso.
William Finney,	Landsman.	Joined at Callao; run at Oahu.
Joseph Francis,	Seaman.	Joined at Oahu; discharged at same place.
Henry Gross,	Officers' Cook.	Joined in the United States; run at Oahu.
Lyman Gaylard,	Carpenter's Mate.	Joined in the United States; discharged at Sydney.
William Gillan,	Seaman.	Joined in the United States; served the cruise.
Matthew Garrigan,	Landsman.	Joined in the United States; sent home in the Relief.
James H. Gibson,	Cockswain.	Joined in the United States; served the cruise.
James H. Grey,	Ord'y Seaman.	Joined in the United States; run at Oahu.
James Graham,	Ord'y Seaman.	Joined in the United States; served the cruise.

John Griem,	Seaman.	Joined in the United States; transferred to the Independence.
James Green,	Capt. Top.	Joined in the United States; served the cruise.
Barney Gibbons,	Landsman.	Joined at Rio; run at Valparaiso.
Francis Garrison,	Seaman.	Joined at Rio; run, April 9th, 1840.
Madison Green,	Ord'y Seaman.	Joined at Rio; served the cruise.
Joseph M'Gomey,	Ord'y Seaman.	Joined at Callao; discharged at Oahu, Oct. 31st, 1840.
Henry Greenfield,	Boatsn's Mate.	Joined in the United States; served the cruise.
Daniel Green,	Gunner's Mate.	Joined in the United States; served the cruise.
Thomas Green,	Quarter-Master.	Joined in the United States; served the cruise.
Nathaniel Goodhue,	Capt. Fore-top.	Joined in the United States; served the cruise.
John P. Griffen,	Seaman.	Joined in the United States; served the cruise.
Ludwig Graves,	Seaman.	Joined at Rio; served the cruise.
Robert Goodwin,	Ord'y Seaman.	Joined at Callao; served the cruise.
Thomas Gorden,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Griffith Griffith,	Capt. Top.	Joined in the United States; run at Sydney.
Fergus Gallagher,	Cooper.	Joined in the United States; returned in the Relief.
John Gaunt,	Seaman.	Joined in the United States; sent home sick from Madeira.
Domingo Gonzalez,	Seaman.	Joined at Rio; returned in the Relief.
John A. Gardner,	Ord'y Seaman.	Joined at Callao; run at Oahu.
Moses Galchell,	Seaman.	Joined at Callao; run at Tahiti.
John Gorden,	Quarter-Master.	Joined in the United States; served the cruise.
John Gillin,	Ord'y Seaman.	Joined in the United States; served the cruise.
Ezra Green,	Yeoman.	Joined in the United States; served the cruise.
Joseph Gundy,	Ord'y Seaman.	Joined in the United States; discharged at Rio, Dec. 31st, 1838.
John Green,	Boatsn's Mate.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
William Goodman,	Ord'y Seaman.	Joined in the United States; run at Rio.
John Glover,	Capt. Top.	Joined at Callao; served the cruise.
Manuel Guido,	2d Class Boy.	Joined at Madeira; returned to United States in the Relief.
James Grey,	Pilot.	Joined at Tongataboo; discharged at Oahu, Oct. 31st, 1840.
Edwin Hubbard,	Seaman.	Joined in the United States; served the cruise.

Thomas Harden,	Officers' Cook.	Joined in the United States; served the cruise.
James Harrison,	Officers' Steward.	Joined in the United States; discharged at Madeira.
John Harmon,	Capt. Forecastle.	Joined in the United States; served the cruise.
John Harmon,	Seaman.	Joined in the United States; served the cruise.
William Hyde,	Carpenter's Mate.	Joined in the United States; served the cruise.
Lewis Herron,	Cooper.	Joined in the United States; served the cruise.
James Henderson,	Quarter-Master.	Joined in the United States; served the cruise.
Lyranus Hatch,	Seaman.	Joined in the United States; discharged at New Zealand.
Henry Hughes,	Ord'y Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Henry R. Heyer,	Quarter-Master.	Joined in the United States; served the cruise.
Henry Hudson,	Seaman.	Joined in the United States; served the cruise.
Lawrence Hufford,	Seaman.	Joined in the United States; sent home in the Relief.
James Haskins,	1st Class Boy.	Joined in the United States; served the cruise.
James Haggerty,	Ord'y Seaman.	Joined in the United States; sent home in the Relief.
William H. Hicks,	Ord'y Seaman.	Joined in the United States; sent home in the Relief.
Royal Hope,	Landsman.	Joined at Rio; run at Oahu.
John Harris,	Landsman.	Joined at Rio; run at Sydney.
Chas. E. Horniston,	Seaman.	Joined at Rio; run at Valparaiso.
David Haining,	Ord'y Seaman.	Joined at Rio; lost in the Sea-Gull.
Antonio Hernandez,	Officers' Steward.	Joined at Callao; discharged at California.
Wm. Hutchinson,	Ord'y Seaman.	Joined at Hawaii; served the cruise.
Winslow F. Higgins,	Ord'y Seaman.	Joined at Maui; served the cruise.
John Hall,	Ord'y Seaman.	Joined at Cape Town; served the cruise.
John Hellender,	Seaman.	Joined at Rio; served the cruise.
George Husted,	Quarter-Master.	Joined in the United States; discharged at Oahu, Nov. 2d, 1840.
Jacob Harrid,	Seaman.	Joined in the United States; run at Callao.
Samuel Hobsen,	Armourer.	Joined in the United States; returned in the Relief.
Edward Hill,	Seaman.	Joined in the United States; discharged at Oahu, Nov. 2d, 1840.
Robinson Hicks,	Ord'y Seaman.	Joined in the United States; run at Sydney.
John Hughes,	2d Class Boy.	Joined at Callao; run at Oahu.

John Haggerty,	Ord'y Seaman.	Joined at Upolu; run at Sydney.
John Harrison,	Seaman.	Joined at Oahu; run at Singapore.
Asa Hart,	Ord'y Seaman.	Joined in the United States; served the cruise.
Emanuel Howard,	Ord'y Seaman.	Joined in the United States; served the cruise.
John Harman,	Private.	Joined in the United States; served the cruise.
Arthur Hughes,	Private.	Joined in the United States; served the cruise.
Amos Howell,	Capt. Hold.	Joined in the United States; sent home from Rio, sick.
John C. Head,	Capt. Top.	Joined in the United States; served the cruise.
Wm. P. Hefferman,	Capt. Top.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
James G. Hanbury,	Hosp. Steward.	Joined in the United States; served the cruise.
Santo Hercules,	Seaman.	Joined in the United States; discharged in New Zealand.
Samuel B. Holt,	Capt. Hold.	Joined in the United States; discharged at Oahu, October 31st, 1840.
James Hunt,	Private.	Joined in the United States; served the cruise.
Benjamin Holden,	Private.	Joined in the United States; died at Callao, July 8th, 1839.
Alvin Harris,	Sailmaker's Mate.	Joined in the United States; served the cruise.
Nathaniel Harris,	Ord'y Seaman.	Joined in the United States; discharged at New Zealand, 31st March, 1840.
William Hayes,	Seaman.	Joined in the United States; served the cruise.
James Hayes,	Ord'y Seaman.	Joined in the United States; served the cruise.
Henry Hammond,	Quarter-Master.	Joined in the United States; served the cruise.
Lewis Hanson,	Ord'y Seaman.	Joined at Callao; discharged at Sydney, Dec. 16th, 1839.
Thomas Hines,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Francis G. Huggins,	Seaman.	Joined at Sandwich Islands; served the cruise.
William Jarrett,	Master-at-Arms.	Joined in the United States; discharged at Oahu, October 31st, 1840.
William Johnson,	Seaman.	Joined in the United States; sent home in the Relief.
Archibald Jackson,	1st Class Boy.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Francis Joseph,	Seaman.	Joined in the United States; served the cruise.

Thomas Jones,	Seaman.	Joined in the United States; sent home in the Relief.
Francis Johnson,	Ord'y Seaman.	Joined at Rio; sent home in the Relief.
Robert Johnson,	Seaman.	Joined at Rio; lost in the Sea-Gull.
William Jones, 1st,	Seaman.	Joined at Rio; run at the same place.
John Joseph,	Capt.'s Steward.	Joined at Valparaiso; served the cruise.
William Jones,	Seaman.	Joined at Rio; served the cruise.
Charles Jorff,	Ord'y Seaman.	Joined at Valparaiso; served the cruise.
David Jones,	Seaman.	Joined at Oahu; served the cruise.
William Jewell,	Seaman.	Joined in the United States; discharged at Oahu, Nov. 2d, 1840.
William Jeffries,	Ord'y Seaman.	Joined in the United States; run at Rio.
Samuel J. Jordon,	Ord'y Seaman.	Joined at Sydney; run at same place.
A. Jacquinot,	Ass't Sc. Corps.	Joined at Rio; run at Callao.
Warren Johnson,	Officers' Steward.	Joined at Oahu; run at Fort George, Oregon.
John Jones,	Ord'y Seaman.	Joined at Sydney; served the cruise.
Thomas Jefferson,	Seaman.	Joined in the United States; returned in the Relief.
Daniel Jefferson,	Ord'y Seaman.	Joined in the United States; returned in the Relief.
Henry Johnson,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Elijah King,	Ord'y Seaman.	Joined in the United States; served the cruise.
Thomas Kennedy,	Seaman.	Joined at Rio; run at the same place.
Stephen Knight,	Ship's Cook.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Charles Knowles,	Ord'y Seaman.	Joined in the United States; served the cruise.
Richard King,	Ord'y Seaman.	Joined at Maui; served the cruise.
Wm. H. King,	Corp. Marines.	Joined in the United States; served the cruise.
Charles Kingsland,	Ord'y Seaman.	Joined at Upolu; served the cruise.
Allen W. Kirby,	Capt. Hold.	Joined in the United States; discharged at Oahu, Nov. 2d, 1840.
John Kellum,	Quarter-Master.	Joined in the United States; served the cruise.
Samuel Keenan,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
John Kedd,	Seaman.	Joined in the United States; run at Sydney.
John King,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Joseph Limont,	Seaman.	Joined in the United States; served the cruise.
Francis Linthicum,	Cockswain.	Joined in the United States; discharged at Oahu, October 31st, 1840.
Godfrey Letourno,	Seaman.	Joined in the United States; served the cruise.

Peter Lewis,	Ord'y Seaman.	Joined at Rio; served out the cruise.
John Latty,	1st Class Boy.	Joined at Rio; served out the cruise.
Wm. J. Lester,	Seaman.	Joined at Rio; served out the cruise.
Wm. Lawrence,	Ord'y Seaman.	Joined at Valparaiso; run at Sydney.
David Leavitt,	Ord'y Seaman.	Joined at Maui; served the cruise.
Charles Lear,	Ord'y Seaman.	Joined at Maui; served the cruise.
Lawrence Littleyear,	Private.	Joined in the United States; sent home in the Relief.
Charles Lowe,	Seaman.	Joined in the United States; served the cruise.
William Lloyd,	Capt. Top.	Joined in the United States; served the cruise.
William Lowe,	Seaman.	Joined at Oahu; discharged same place.
John Lewis,	Seaman.	Joined in the United States; run at Rio.
Washington Lyner,	Ord'y Seaman.	Joined in the United States; run at Rio.
Henry Luther,	Seaman.	Joined at Rio; run at Valparaiso.
John Lennard,	Seaman.	Joined at Rio; sent to the United States in Relief.
William Lee,	Seaman.	Joined at Callao; run at Sydney.
James Leavett,	Capt. Top.	Joined in the United States; served the cruise.
Peter Lines,	Ord'y Seaman.	Joined in the United States; served the cruise.
Wm. S. Longley,	Seaman.	Joined in the United States; served the cruise.
Bernard Logan,	Ord'y Seaman.	Joined in the United States; returned in the Relief.
Horace Lamson,	Ord'y Seaman.	Joined at Valparaiso; sent to United States in Relief.
James Lowell,	Capt. Forecastle.	Joined in the United States; served the cruise.
John Loyd,	Ord'y Seaman.	Joined in the United States; run at Sydney.
William Loyd,	Landsman.	Joined in the United States; sent home in the Relief.
Laurence M'Gill,	Ord'y Seaman.	Joined in the United States; run at Manilla.
Wm. M'Donald,	Seaman.	Joined in the United States; served the cruise.
Henry Mabee,	Seaman.	Joined in the United States; run at Sydney.
Daniel M'Carty,	Quarter-Gunner.	Joined in the United States; discharged at Rio, Dec. 31st, 1838.
Francis Montserat,	Officers' Steward.	Joined in the United States; served the cruise.
James Moran,	1st Class Boy.	Joined in the United States; returned in the Relief.
John M'Keen,	Ship's Cook.	Joined in the United States; served the cruise.

John Myres,	Seaman.	Joined in the United States; served the cruise.
Thomas M'Manus,	Ord'y Seaman.	Joined in the United States; served the cruise.
William Miller, 1st,	Ord'y Seaman.	Joined in the United States; lost in the Sea-Gull.
John Mattox,	Seaman.	Joined at Rio; served the cruise.
Alexander M'Donald,	Landsman.	Joined in the United States; served the cruise.
Wm. Miller, 2d,	Ord'y Seaman.	Joined at Rio; run at Callao.
Justin Mandon,	Captain's Cook.	Joined at Rio; served the cruise.
Andrew Murray,	Seaman.	Joined at Sydney; run at Oahu.
Joseph Medley,	Seaman.	Joined at New Zealand; served the cruise.
Edward M'Intire,	Ord'y Seaman.	Joined at Cape Town; served the cruise.
James M'Kenzie,	Private.	Joined in the United States; served the cruise.
Samuel More,	Capt. Top.	Joined in the United States; discharged at Oahu, Nov. 20th, 1841.
Peter M'Fee,	Ord'y Seaman.	Joined at Callao; served the cruise.
John H. Myres,	2d Class Boy.	Joined at Callao; served the cruise.
Thomas Mizir,	1st Class Boy.	Joined at Tahiti; served the cruise.
Arthur M'Gill,	Seaman.	Joined at Upolu; discharged at Oahu, Nov. 20th, 1841.
Frank Mackey,	Seaman.	Joined at Rio; served the cruise.
Robert Munroe,	Ord'y Seaman.	Joined at Valparaiso; run at Sydney.
John Munroe,	Seaman.	Joined at Valparaiso; run at Sydney.
Bernard M'Gee,	Seaman.	Joined at Callao; run at Sydney.
Lewis Meaker,	Ord'y Seaman.	Joined at Sydney; discharged at Oahu, 25th Nov. 1840.
William Migley,	Quarter-Gunner.	Joined in the United States; served the cruise.
John Meiney,	Master-at-Arms.	Joined in the United States; served the cruise.
George Mitchell,	Quarter-Master.	Joined at Valparaiso; served the cruise.
Theodore Mather,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Edward Mott,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Hugh M'Bride,	Ord'y Seaman.	Joined at Upolu; served the cruise.
John C. March,	Private.	Joined in the United States; served the cruise.
James M'Cormick,	Seaman.	Joined in the United States; served the cruise.
Michael Miller,	Ord'y Seaman.	Joined in the United States; died at sea, 15th August, 1839.
David Miller,	Ord'y Seaman.	Joined in the United States; returned in the Relief.
James Marshall,	Seaman.	Joined in the United States; served the cruise.
William Moody,	Quarter-Master.	Joined in the United States; served the cruise.

John More,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Thomas Martin,	Landsman.	Joined in the United States; discharged at Rio, Dec. 31st, 1838.
John Mitchell,	Ord'y Seaman.	Joined at Rio; served the cruise.
Stephen Morant,	Seaman.	Joined at Sydney; run at Oahu.
Earl Millikin,	Quarter-Gunner.	Joined at Oahu; served the cruise.
Jack Miller,	Seaman.	Joined at Sandwich Islands; served the cruise.
James Nowland,	Capt. Top.	Joined in the United States; run at Sydney.
William Norton,	Seaman.	Joined in the United States; discharged at Rio, Dec. 31st, 1838.
Edward Nichols,	Ord'y Seaman.	Joined at Cape Town; served the cruise.
John Nebhut,	Private.	Joined in the United States; served the cruise.
Horatio Nelson,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Nelson Norton,	Capt. Top.	Joined in the United States; discharged at Oahu, Nov. 2d, 1840.
William Noble,	Seaman.	Joined in the United States; run at Valparaiso.
Thomas Noble,	Seaman.	Joined at Rio; sent home in the Relief.
George Nichols,	Ord'y Seaman.	Joined at Valparaiso; run at Sydney.
Joseph Neale,	Officers' Cook.	Joined at Callao; run at Sydney.
Chas. H. Nicholson,	Seaman.	Joined in the United States; discharged at Oahu, Nov. 25th, 1841.
William Neill,	Quarter-Master.	Joined in the United States; served the cruise.
Andrew Nordston,	Ord'y Seaman.	Joined in the United States; served the cruise.
James Nurse.	Officers' Steward.	Joined in the United States; discharged at Rio, Dec. 3d, 1838.
Benjamin Norton,	Ord'y Seaman.	Joined in the United States; served the cruise.
Thomas Nisbet,	Ord'y Seaman.	Joined at Singapore; served the cruise.
William Orr,	Ord'y Seaman.	Joined in the United States; served the cruise.
Alexander Ogle,	Corp. Marines.	Joined in the United States; died at sea, Aug. 12th, 1839.
John Orr,	Ord'y Seaman.	Joined in the United States; served the cruise.
Ambrose W. Olivar,	Ord'y Seaman.	Joined in the United States; served the cruise.
Daniel Osmand,	Seaman.	Joined in the United States; run at Valparaiso.
David B. Park,	Sailmaker's Mate.	Joined in the United States; served the cruise.
Thomas Piner,	Quarter-Master.	Joined in the United States; served the cruise.

George Porter,	Seaman.	Joined in the United States; died at sea, March 3d, 1842.
Benjamin Pulmar,	Ord'y Seaman.	Joined in the United States; run at Sydney.
Thomas Parker,	Seaman.	Joined at Rio; run at Sydney.
William Pearson,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Calvin Proctor,	Seaman.	Joined at Oahu; served the cruise.
James Perry,	Ord'y Seaman.	Joined at Oahu; served the cruise.
George Parker,	Capt. Top.	Joined in the United States; run at Sydney.
Thomas Penny,	Ord'y Seaman.	Joined in the United States; run at Oahu.
James M. Pottle,	Private.	Joined in the United States; run at Valparaiso.
James Patterson,	Landsman.	Joined in the United States; returned in the Relief.
Samuel Pensyl,	Private.	Joined in the United States; served the cruise.
Robert Pully,	Quarter-Master.	Joined in the United States; served the cruise.
John Polnell,	Quarter-Gunner.	Joined in the United States; served the cruise.
James Potter,	Ord'y Seaman.	Joined in the United States; run at Rio.
George Parmilla,	Ord'y Seaman.	Joined at New Zealand; run at Oahu.
James Quin,	Ord'y Seaman.	Joined in the United States; discharged at Oahu, Nov. 2d, 1840.
Charles Ray,	Ord'y Seaman.	Joined in the United States; served the cruise.
Wm. Roberts,	1st Class Boy.	Joined in the United States; served the cruise.
Theodore Rameris,	Ord'y Seaman.	Joined in the United States; run at Valparaiso.
Joseph Reeves,	Quarter-Master.	Joined in the United States; run at Sydney.
William Robinson,	Seaman.	Joined in the United States; served the cruise.
William Robbin,	Quarter-Master.	Joined in the United States; returned in the Relief.
Michael Ryan,	1st Class Boy.	Joined at Rio; run at Sydney.
William Robb,	1st Class Boy.	Joined at Rio; served the cruise.
John Rivers,	Ord'y Seaman.	Joined at Rio; lost in the Sea-Gull.
John Roach,	Landsman.	Joined at Sydney; served the cruise.
Abraham Roberts,	Ord'y Seaman.	Joined at New Zealand; served the cruise.
George Rocket,	Landsman.	Joined at New Zealand; discharged at Oahu, Oct. 31st, 1840.
James Rock,	Ord'y Seaman.	Joined at Oahu; run at California.
John Radley,	Ord'y Seaman.	Joined at Oahu; served the cruise.
George Robinson,	Ord'y Seaman.	Joined at Maui; served the cruise.
Edgar A. Richardson,	Private.	Joined in the United States; served the cruise.
Owen Roberts,	Private.	Joined in the United States; served the cruise.

George Rodgers,	Private.	Joined in the United States; served the cruise.
John Robinson,	Capt. Forecastle.	Joined in the United States; served the cruise.
Humphrey Roberts,	Armourer.	Joined at Sydney; served the cruise.
Matthias Roach,	Ord'y Seaman.	Joined in the United States; run at Rio.
Morris Russel,	Landsman.	Joined in the United States; run at Rio.
Elias Russel,	Ship's Cook.	Joined in the United States; run at Callao.
John Rye,	Seaman.	Joined in the United States; served the cruise.
John Riley,	Private.	Joined in the United States; served the cruise.
Wm. Richmond,	Boatsn's Mate.	Joined in the United States; served the cruise.
John D. Richardson,	Cooper.	Joined in the United States; served the cruise.
Joseph Rebo,	2d Class Boy.	Joined at Rio; served the cruise.
James G. Rowe,	Seaman.	Joined in the United States; served the cruise.
George Reynolds,	Ord'y Seaman.	Joined in the United States; died at sea, Aug. 22d, 1839.
Raymond Reed,	Seaman.	Joined at Oahu; served the cruise.
Nelson Ransom,	Seaman.	Joined at Sandwich Islands; served the cruise.
George Smith,	Seaman.	Joined in the United States; discharged at Rio, Nov. 28th, 1838.
William J. Smith,	Quarter-Master.	Joined in the United States; discharged at Sydney, 19th March, 1840.
Thomas Sinclair,	Seaman.	Joined in the United States; served the cruise.
James Straham,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
John Sac,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
David Smith,	Ord'y Seaman.	Joined in the United States; served the cruise.
James Sheaf,	Ord'y Seaman.	Joined in the United States; served the cruise.
John W. Smith,	Seaman.	Joined in the United States; discharged at Rio, Dec. 31st, 1838.
Edward Southworth,	Quarter-Master.	Joined in the United States; served the cruise.
Allen Simons,	Ord'y Seaman.	Joined in the United States; run at Valparaiso.
James Smith, 1st,	Seaman.	Joined in the United States; run at Sydney.
John Smith, 1st,	Ord'y Seaman.	Joined in the United States; run at Rio.
John Smith, 2d,	Ord'y Seaman.	Joined in the United States; lost in the Sea-Gull.

James Smith, 2d,	Ord'y Seaman.	Joined in the United States; lost in the Sea-Gull.
John Small,	Baker.	Joined at Rio; discharged at New Zealand.
William Soule,	Landsman.	Joined at Rio; served the cruise.
Moses J. Smith,	Ord'y Seaman.	Joined at Rio; run at Sydney.
Wm. H. Spencer,	Seaman.	Joined at Rio; run at Sydney.
Frederick Seymore,	Ord'y Seaman.	Joined at Rio; run at Sydney.
George Staunton,	Ord'y Seaman.	Joined at Sydney; run at Oahu.
Peter Sweeny,	Seaman.	Joined at New Zealand; discharged at Oahu, Oct. 31st, 1840.
James Scott,	Seaman.	Joined at New Zealand; run at Oahu.
James Stover,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Thomas Simmons,	Ord'y Seaman.	Joined at Hawaii; run at same place.
Joseph Silvey,	1st Class Boy.	Joined at Maui; died at sea, April 19th, 1842.
Michael Spiney,	Seaman.	Joined at Oahu; served the cruise.
William Smith, 2d,	1st Class Boy.	Joined at Oahu; discharged at same place.
Simeon Stearns,	Orderly Sergeant.	Joined in the United States; served the cruise.
William Smith,	Seaman.	Joined at Rio; drowned at Feejee.
John H. Stevens,	Ord'y Seaman.	Joined at Tahiti; run at Sydney.
Charles C. Sherwood,	Seaman.	Joined at Rio; served the cruise.
Antonio Sylvester,	Ord'y Seaman.	Joined at Oahu; run at same place.
William Steward,	Capt. Top.	Joined in the United States; died at sea, 11th March, 1839.
Peter Shaw,	Seaman.	Joined at Valparaiso; served the cruise.
William Slater,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Francis Salsbury,	Capt. Top.	Joined in the United States; served the cruise.
Frank Smith,	Officers' Steward.	Joined in the United States; served the cruise.
Thomas Scott,	Quarter-Master.	Joined in the United States; served the cruise.
Benjamin Stevens,	Seaman.	Joined in the United States; returned in the Relief.
Hendrick Smith,	Ord'y Seaman.	Joined in the United States; discharged at Oahu, Nov. 2d, 1840.
Samuel Steward,	Landsman.	Joined in the United States; run at Rio.
John Smith,	Seaman.	Joined at Rio; run at Sydney.
George Seabold,	Seaman.	Joined at Rio; run at Aurora Island.
Robert Steward,	Ord'y Seaman.	Joined at Rio; run at Aurora Island.
James Spear,	Armourer.	Joined at Valparaiso; run at Sydney.
James Sweeney,	Seaman.	Joined at Sydney; run at Oahu.
John Smith,	Ord'y Seaman.	Joined at Feejee Islands; discharged at same place.
Simon Shepherd,	Ord'y Seaman.	Joined in the United States; served the cruise.
James De Sauls,	Ship's Cook.	Joined at Callao; run at Astoria.

Benj. Somerndyke,	Carpenter's Mate.	Joined in the United States; served the cruise.
John Smith,	Private.	Joined in the United States; served the cruise.
George Sharrock,	Carpenter's Mate.	Joined at Valparaiso; served the cruise.
Robert Spears,	Capt. Top.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Samuel Sutton,	Seaman.	Joined in the United States; served the cruise.
John Strafford,	Seaman.	Joined at Valparaiso; served the cruise.
George Smith,	Private.	Joined in the United States; served the cruise.
Thomas Sandford,	Quarter-Master.	Joined in the United States; served the cruise.
William Smith,	Yeoman.	Joined in the United States; served the cruise.
John Steward,	Ship's Cook.	Joined in the United States; served the cruise.
Samuel Stretch,	Gunner's Mate.	Joined in the United States; served the cruise.
David M. Smith,	Armourer.	Joined in the United States; served the cruise.
Wm. Schenck,	Carpenter's Mate.	Joined in the United States; served the cruise.
Thomas Scarpa,	Officers' Steward.	Joined at Rio; discharged at same place.
Henry Sares,	Capt. Top.	Joined at Callao; served the cruise.
James Stark,	Ord'y Seaman.	Joined at Callao; discharged at Sydney, Dec. 15th, 1839.
Henry Stephens,	1st Class Boy.	Joined at Sydney; run at New Zealand.
Thomas Shor,	Seaman.	Joined at the Sandwich Islands; served the cruise.
George Sudor,	Quarter-Master.	Joined in the United States; sent home in the Relief.
Richard Terry,	Seaman.	Joined in the United States; lost in the Sea-Gull.
Henry Turner,	Capt. Forecastle.	Joined in the United States; served the cruise.
James Townsend,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
George Treble,	Seaman.	Joined in the United States; served the cruise.
Matthew Thompson,	Capt. Top.	Joined in the United States; sent home in the Relief.
Henry Tubor,	Seaman.	Joined in the United States; served the cruise.
John Thompson, 1st.	Seaman.	Joined in the United States; run at Sydney.
John Thompson, 3d,	1st Class Boy.	Joined at Sydney; run at same place.
Samuel Taber,	1st Class Boy.	Joined at Oahu; served the cruise.

John Track,	Seaman.	Joined at Oahu; discharged same place.
Ashton Taylor,	Private.	Joined in the United States; served the cruise.
David Thomas,	Officers' Cook.	Joined at Feejee Islands; served the cruise.
Abijah Traverse,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Eeward Townsend,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Henry Thompson,	Landsman	Joined in the United States; run at Callao.
Humphrey Thomas,	Ord'y Seaman.	Joined at Upolu; run at Sydney.
John Thompson, 2d,	Capt. Forecastle.	Joined in the United States; served the cruise.
Wm. W. Turner,	Quarter-Gunner.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Charles Thomas,	Seaman.	Joined in the United States; run at Sydney.
Edwin Thene,	Seaman.	Joined in the United States; served the cruise.
William Thompson,	Seaman.	Joined in the United States; served the cruise.
William Teneycke,	Seaman.	Joined in the United States; sent home in the Relief.
Charles Truelare,	Ord'y Seaman.	Joined in the United States; served the cruise.
John Undietch,	Ord'y Seaman.	Joined in the United States; served the cruise.
John Vancleck,	Seaman.	Joined in the United States; served the cruise.
Edward Verry,	Ord'y Seaman.	Joined in the United States; served the cruise.
John Vanderveer,	Seaman.	Joined at Valparaiso; sent home in the Relief.
Antonia Vines,	Officers' Steward.	Joined at Callao; sent home in the Relief.
George Wesson,	Seaman.	Joined in the United States; served the cruise.
James Wilkinson,	Seaman,	Joined in the United States; served the cruise.
Samuel Williams,	Gunner's Mate.	Joined in the United States; served the cruise.
Daniel Wright,	Cockswain.	Joined in the United States; returned in the Relief.
Edward Widdows,	Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
James C. Walfe,	Quarter-Gunner.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Benjamin Webb,	Ord'y Seaman.	Joined in the United States; discharged at Oahu, Oct. 31st, 1840.
Robert Willis,	Seaman.	Joined in the United States; discharged at Rio, Dec. 31st, 1838.
Thomas Wilson,	Sailmaker's Mate.	Joined in the United States; served the cruise.

Horace Wister,	Ord'y Seaman.	Joined in the United States; discharged at Oahu, March 31st, 1841.
Henry Waltham,	Ord'y Seaman.	Joined in the United States; served the cruise.
Mark Widden,	Landsman.	Joined in the United States; returned in the Relief.
Philip Williams,	Ord'y Seaman.	Joined in the United States; returned in the Relief.
Nicholas Whiteston,	Ord'y Seaman.	Joined at Rio; lost in the Sea-Gull.
Josiah Weaver,	1st Class Boy.	Joined at New Zealand; run at Oahu.
Thomas Wilkins,	Ord'y Seaman.	Joined at Oahu; served the cruise.
Charles Willis,	Ord'y Seaman.	Joined at Oahu; run at Hawaii.
Zaccheus Wheeler,	Ord'y Seaman.	Joined at Oahu; served the cruise.
John Weller,	Ord'y Seaman.	Joined at Cape Town; served the cruise.
Michael Ward,	Private.	Joined in the United States; served the cruise.
James Williams,	Landsman.	Joined in the United States; sent home in the Relief.
John A. Weaver,	Seaman.	Joined at Valparaiso; served the cruise.
William White,	Ord'y Seaman.	Joined at Callao; served the cruise.
Jedediah Wilber,	Ord'y Seaman.	Joined at Callao; served the cruise.
John Williams,	2d Class Boy.	Joined at Sydney; served the cruise.
Thomas L. Williams,	Seaman.	Joined at Upolu; served the cruise.
John White, 2d,	Ord'y Seaman.	Joined in the United States; run at Rio.
Stephen Winks,	Ord'y Seaman.	Joined in the United States; run at Rio.
William Wells,	Yeoman.	Joined at Valparaiso; served the cruise.
George Williams,	Boatsn's Mate.	Joined in the United States; served the cruise.
James White,	Capt. Forecastle.	Joined in the United States; served the cruise.
Kembal Whitney,	Ord'y Seaman.	Joined in the United States; served the cruise.
John Wilson,	Ord'y Seaman.	Joined in the United States; run at California.
Aaron Walmsley,	Sergeant Marines.	Joined in the United States; served the cruise.
Daniel Whitehorn,	Quarter-Gunner.	Joined in the United States; served the cruise.
Noah Wyeth,	Quarter-Master.	Joined in the United States; discharged at Rio, Dec. 31st, 1838.
Joseph Wilson,	Ord'y Seaman.	Joined in the United States; run at Rio.
Peter Welsh,	Seaman.	Joined in the United States; sent home in the Relief.
William Wilson,	Quarter-Master.	Joined in the United States; sent home in the Relief.
Henry C. Williams,	Landsman.	Joined in the United States; served the cruise.
Michael Williams,	Seaman.	Joined in the United States; served the cruise.

Francis Williams,	Boatsn's Mate.	Joined in the United States; served the cruise.
Thomas Wallace,	1st Class Boy.	Joined in the United States; served the cruise.
Jack Williams,	Ord'y Seaman.	Joined in the United States; served the cruise.
William York,	Ord'y Seaman.	Joined in the United States; sent home in the Relief.
Henry Young, 1st,	Ord'y Seaman.	Joined at Hawaii; served the cruise.
Henry Young, 2d,	Ord'y Seaman.	Joined in the United States; discharged at New Zealand.

CHAPTER I.

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NARRATIVE

OF

THE EXPLORING EXPEDITION.

CHAPTER I.

MADEIRA.

1838.

On the 17th of August I received my sailing instructions, and final orders to put to sea the moment I was ready. The signal was accordingly made that the squadron was under sailing orders.

At 3 o'clock P. M., on Saturday, the 18th, the signal for sailing was made, and we got under way with an ebb tide, and a light air from southwest. At 5 P. M. we anchored at the Horseshoe, in consequence of its falling calm and of the tide making against us; but at 9 P. M. the wind freshened, when we tripped and stood down the bay. At 4 A. M. on the 19th, we passed Cape Henry Light; at 9 A. M. discharged our pilot and took our departure.

At 11 A. M. all hands were called to muster, and divine service was performed. The day was beautiful, the sea smooth, the wind light, and the squadron around, with the land sinking from our view. I shall never forget the impressions that crowded on me during that day in the hours of service. It required all the hope I could muster to outweigh the intense feeling of responsibility that hung over me. I may compare it to that of one doomed to destruction. We were admonished in the discourse to repose confidence in the aid and

protection of Him whom all hands had been called to worship, and the admonition was well calculated to do us good.

Orders were now given to rendezvous, in case of separation, at Madeira. It was soon found, in the trial of the sailing qualities of the vessels, that the Relief was unsuited to act with the rest without great detention, and after four days I determined to part company with her, giving her orders to proceed to the Cape de Verdes.

The novelty of our situation was quite enough to interest all; free communications were had, and endeavours were made to excite a general interest in all the objects that were passing about us. It was amusing to see all entering into the novel occupation of dissecting the fish taken, and to hear scientific names bandied about between Jack and his shipmates.

On the 25th I began the trial of the current with the current-log; and experiments by sinking a white object to ascertain the distance to which the solar light penetrates the sea. Our current-log was formed of two small kegs with a distance-line between them of five fathoms, and the log-line fastened to the middle of it. One keg is made heavy enough to sink another air-tight, just beneath the surface of the water, so that we get the current uninfluenced by wind, and all the other circumstances that would affect the ship and not the surface current. I adopted for the other experiments the usual sea anchor for a boat, viz., an iron pot, painting the bottom of it white. The depths were noted when it was lost sight of, and when it was again seen, and the mean of these depths was taken for the result.

From our position in latitude 36° 08′ N., longitude 71° 24′ W., and the temperature of the water, we knew we were on the edge of the Gulf Stream; and we experienced what I presume has been called the eddy current. It was found setting to the west and northwest, but ought more properly to be termed an indraught to the Stream. I am little disposed to believe that a southerly current exists, as has been reported, like the inner one. We had a fine opportunity for examining the temperature of the Stream, as we crossed it at right angles to its course, and the thermometer was observed hourly while making little progress through the water: the maximum temperature of the water was found to be 83°, and width of the Stream about fifty-three miles. Much information might be acquired by a series of experiments in the Gulf Stream, which would tend to perfect the navigation and shorten the passage between the ports on our coast. It is to be hoped it will claim the attention of those engaged on the coast survey.

On the 25th of August our winds became favourable, and we were enabled to lay our course towards Madeira. I continued to keep the

direction of the Gulf Stream towards the Western Islands. We felt its influence until we reached the longitude of 48° W., and found it to set for the last few days to the northward of east. The winds had been light and the sea smooth, indicating no other impulse than the flow of the Stream. The temperature gradually decreased from 83° to 75°.

On the night of the 26th we parted company with the Peacock and Flying-Fish in a squall, and did not again meet them until we reached Madeira. The 2d September we spoke a brig from Salem on a whaling voyage. The 5th of September, being near the reported shoal of St. Anne, I determined to pass over its position.

On the 6th we passed over it, the sea was smooth, the horizon clear, and the day beautiful. At 8 A. M. the look-out cried out "Rocks, or a wreck on the starboard bow!" which at once created an excitement on board. We stood for it. It had at first every appearance of a rock, then that of a wreck with the masts gone. It proved, however, to be a large tree of cotton-wood, one hundred and twenty feet in length, and fourteen feet in circumference at the height of five feet above the roots. It had been a long time in the water, was full of barnacles, and much eaten by the teredo navalis. Great quantities of fish were about it, consisting of dolphins, sharks, &c. We did not, however, succeed in taking any. In rough weather it might easily have been mistaken for a rock, particularly if passed in twilight, or at night. There is little doubt in my mind that many of the numerous vigias that appear on our charts have as little foundation. No current was experienced hereabouts, and I am led to the conclusion that a sort of eddy or still water is here found, wherein most of the wood carried by the Gulf Stream becomes deposited for a time.

On the 8th, longitude 34° 08′ W., latitude 37° 17′ N., the current was found setting to the southward and westward.

In consequence of the wind being from the southward and westward, I was compelled, after making the Peak of Pico, to go to the northward of St. Michael's. I am satisfied, however, it is much better to keep to the southward, as the wind will be found more steady and stronger. Besides, the current, at that season of the year, sets to the westward among the islands.

As we passed St. Michael's, we amused ourselves by a view, through our glasses, of its villas, groves, and cultivated fields.

On the night of the 13th we laid by, just after passing the north end of St. Michael's, in order to examine the position of the Tullock Reef by daylight. We passed within a mile and a half of its reported

position, but saw nothing of it, although the sea was running sufficiently high to have made a heavy break on it, if it did exist.

On the 15th, as we were making sail, George Porter, one of our maintop-men, in loosing the top-gallant sail, was caught by the buntline, and dragged over the yard, where he was seen to hang, as it were quite lifeless, swinging to and fro by the neck.

On the alarm being given, two men ran aloft to his assistance. It now became doubtful on deck whether they would not be all dragged over by the weight of his body, until several others gave assistance and relieved them. It caused a breathless anxiety to us all to see a fellow-being in the momentary expectation that he would be dashed to the deck. He was fortunately rescued and brought below yet living. Here he speedily came to his senses, and recollecting that the drum had rolled to grog just before his accident, he, sailor-like, asked for his portion of it. It was truly a providential escape. This young man died on our way home, in the China Seas, of an inflammatory fever.

On the 16th we made the island of Madeira, and having a strong westerly wind, I determined to pass to Funchal, on its southern side. This may be done at this season, but vessels bound to that port usually prefer going round the eastern point of the island. When off the western point of Madeira we experienced a very long heavy swell, which gave me an opportunity of trying the velocity of the waves, by noting the time the same wave was passing between the vessels. The result gave twenty-three miles per hour, but I was not altogether satisfied with it. It was difficult to measure the correct angle subtended by the Porpoise's masts for the distance, on account of the motion of both vessels. The measurement of the height of the waves I found still more difficult, and the results varied too much to place confidence in them, principally owing to each succeeding swell or wave being less than the preceding one. The different observations gave from twenty-five to fourteen feet; the width of the wave, from the same causes, was equally variable, and each successive result varied from that which preceded it.

Before sunset, we cast anchor in company with the Porpoise and Sea-Gull, and were the next morning joined by the Peacock and Flying-Fish.

Shortly after coming to anchor, we were boarded by the health officer, with the captain of the port, who, on being assured of our good health, gave us permission to land. The United States' Consul, Henry John Burden, Esq., also came on board, and kindly offered us all the attention that lay in his power.

At night, there was a general illumination of the churches, and the constant ringing of the bells added much to the excitement of many on board, and told us we had reached foreign shores.

The first appearance of Madeira did not come up to the idea we had formed of its beauties from the glowing description of travellers. It exhibited nothing to the distant view but a bare and broken rock, of huge dimensions, which, though grand and imposing, is peculiarly dark and gloomy, and it was not until we had made our way close under the land, that we could discover the green patches which are every where scattered over its dark red soil, even to the tops of the highest peaks.

The mountain verdure was afterwards discovered to be owing to groves of heath and broom, which grow to an extraordinary height, aspiring to the stature of forest trees. In addition to these groves, the terraced acclivities, covered with a luxuriant tropical vegetation, change on a closer approach its distant barren aspect into one of extreme beauty and fertility.

The most striking peculiarity in the mountain scenery, is the jagged outline of the ridge, the rudely shaped towers and sharp pyramids of rock, which appear elevated on the tops and sides of the highest peaks as well as on the lower elevations, and the deep precipitous gorges, which cut through the highest mountains almost to their very base.

The shores of the island are mostly lofty cliffs, occasionally facing the water with a perpendicular front one or two thousand feet in height. The cliffs are interrupted by a few small bays, where a richly cultivated valley approaches the water between abrupt precipices, or surrounded by an amphitheatre of rugged hills. These narrow bays are the sites of the villages of Madeira.

As we sailed along from its western end, we occasionally saw, in these quiet and peaceful situations, small white-walled villages, each with its little church at the outlet of the gorges. We were particularly struck with that of the Camera de Lobos, a few miles to the westward of Santa Cruz hill. This is the largest, and is the most interesting of any, from its having been the first point settled by Europeans. The high precipices were new to us Americans: so different from what we are accustomed to in the United States. The scene was still more striking, and our attention was more forcibly arrested, when passing under cliffs of some sixteen hundred feet above us. We were so near them that the sound of the surf was distinctly heard. The whole effect of the view was much heightened by a glowing sunset in one of the finest climates in the world.

Off the eastern cape of the island, many isolated rocks were seen

separated from the land, with bold, abrupt sides and broken outlines. The character of these rocks is remarkable: they stand quite detached from the adjoining cliffs, and some of them rise to a great height in a slender form, with extremely rugged surfaces, and broken edges. Through some, the waters have worn arched ways of large dimensions, which afford a passage for the breaking surf, and would seem to threaten ere long their destruction.

Similar needle-form rocks are seen off the northern Deserta, an island lying some miles east of Madeira. One of them is often mistaken for a ship under sail, to which when first seen it has a considerable resemblance. It stands like a slender broken column, several hundred feet in height, on a base scarcely larger than its summit.

Funchal has a very pleasing appearance from the sea, and its situation in a kind of amphitheatre formed by the mountains, adds to its beauty. The contrast of the white buildings and villas with the green mountains, forms a picture which is much heightened by the bold quadrangular Loo Rock with its embattled summit commanding the harbour in the foreground.

The island throughout is rough and mountainous, but the steeps are clothed with rich and luxuriant verdure. Terraces are visible on every side, and every spot that the ingenuity of man could make available has been apparently turned to advantage, and is diligently cultivated. These spots form an interesting scene, particularly when contrasted with the broken and wild background, with the white cottages clustered at the sea-shore, and gradually extending themselves upwards until the eye rests on the highest and most striking building, that of the convent of Nostra Señora de Monte.

Through the western half of the island runs a central ridge, about five thousand feet high, on which is an extensive plain, called Paul de Serra, which is mostly overgrown, and is used especially for breeding mules and horses. The eastern portion of the island, though quite elevated, is less so than the western.

The valleys usually contain a strip of land of extreme fertility, through which winds the bed of a streamlet, that becomes a mountain torrent in the rainy seasons, but is nearly or quite dry in summer.

The landing at Funchal is on a stony beach, and is accompanied with some little difficulty, partly on account of the surf, but more from the noise, confusion, and uproar made by the native boatmen in their efforts to drag their boat up on the beach. This operation they however understand, and are well accustomed to, and those who desire to land dry, will be wise to employ them.

On the 17th, we paid our respects, with a large party of officers, to the civil governor the Baron de Lordello, field-marshal in the army, and administrator-general of the Province of Madeira and Porto Santo; and also to the military governor Jose Teixcera Rebello, colonel in the army, and commandant of the district.

The civil and military governments were formerly united in the same person, but since the restoration after the reign of Don Miguel, they have been divided. The military governor is now obliged to consult, and is under the control of the civil governor. I was informed that on the appointment of the military governor this was expressly intimated to him, and that the arrangement was made in order to avoid placing too much power in the hands of any one man.

His Excellency Baron Lordello resides in the government house or palace, which is a large quadrangular building, occupied in part as barracks. His suite of apartments fronts the bay, and enjoys a beautiful view of it; they also have the enjoyment of the inbat or sea-breeze. They are very large, and but meagerly furnished. Around the large anteroom are hung the portraits of all the civil, ecclesiastical, and military governors, which form an imposing array of hard outline, stiff figures and faces, with a variety of amusing costume. Those of later years which have been hung up, are not calculated to give very exalted ideas of the standing of the present Portuguese school of portrait painting.

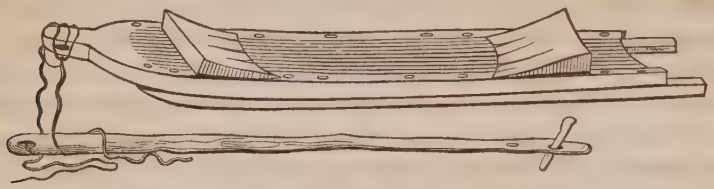
His Excellency the Baron Lordello received us very courteously. Our audience, however, was extremely formal: the whole furniture and appearance of the room served to make it so. We all found it difficult to school ourselves to ceremonies, having been ushered as we were through dilapidated and impoverished courts and vestibules. His Excellency the Baron speaks English remarkably well, which I understood he had acquired while acting as interpreter to the British staff in Portugal, during the Peninsular War. He had been no more than a week in charge of the government, having just arrived from Portugal. After a few monosyllabic questions and answers we took our leave, and he did us the honour to see us through the anteroom to the hall of entrance, where we parted with many bows.

Our next visit was to the military governor, Señor Rebello, who occupied a small apartment at the opposite end of the building. This was not large enough to accommodate us all, and chairs were wanting for many. The manner and ease of the occupant made full amends. Ceremony and form were laid aside; he seemed to

enter warmly into our plans and pleasures, and evinced a great desire to do us service.

Colonel Rebello was one of the proscribed during the reign of terror of Don Miguel, and was concealed for four years, all of which time our consular flag afforded him protection. During this whole period he did not leave the apartment he occupied, or even approach the window.

The streets of the town are very narrow, without sidewalks, and to our view like alleys, but their narrowness produces no inconvenience. They are well paved, and wheel-carriages are unknown. The only vehicle, if so it may be called, is a sledge, of some six feet in length, about twenty inches wide, and only six or eight inches high, on which are transported the pipes of wine. Two strips of hard wood are fastened together for runners.



This sledge is dragged by two very small oxen, and slips easily on the pavement, which is occasionally wet with a cloth. It is no doubt the best mode of transportation in Funchal, for their wine, on account of the great steepness of their streets. Smaller burthens are transported on men's shoulders, or in hampers and baskets on the backs of donkeys.

The middle gutters are now for the most part closed, and made subterranean, no longer the stranger's nuisance. Funchal may compare with most places for the cleanliness of its streets. Little improvement has as yet taken place in the cleanliness and discipline of its prisons.

I was surprised to learn that all misdemeanours are referred for trial to Portugal, and that persons having committed small crimes are kept for years without any disposition being made of them by those in authority. They are maintained at the expense of the complainant, consequently crime is scarcely noticed or complained of. On the one hand it makes the punishment very severe, and on the other, persons are inclined to take the law into their own hands against petty thefts. It is impossible to avoid many painful sights in passing the prisons. Caps on sticks are thrust through the iron gratings, and requests are made for alms, first in beseeching tones, and afterwards,

if nothing is given, one is pained with hearing cries of execration. The occupants are in keeping with the premises, and did not fail to excite both our commiseration and disgust.

Among the lions of Madeira is a villa once belonging to Señor Jose de Carvalhal, a wealthy nobleman who died about a year before our visit. The gardens are well taken care of, and contain many trees and plants from various quarters of the globe. The grounds embrace extensive deer parks, but I was not much struck with the manner in which they were laid out. The present proprietor is the nephew of the late Count.

The convent is also a place to which strangers resort, and the fair nuns of twenty years' standing, I will not dwell on, lest truth might compel me to destroy some of the reputation of those charms which former visiters have done honour to. Feather-flowers continue to be sold here, and the nuns to jest with, and receive the homage of their guests. Since the overthrow of Don Miguel in 1824, monasteries have been abolished and liberty given to the nuns to return to the world, of which privilege some of them availed themselves. They do not now exceed eighty in number, and as none have since been allowed to take the veil, they will soon decrease.

The rides in Madeira are beautiful. The roads are well made, easily and safely travelled on a Madeira pony, with a pony-boy or burroquerro. One is at a loss to which to impute the most strength of mind and endurance, the pony or the boy. These boys keep constantly near the rider, at times holding on to the tail of the pony, then bestowing repeated blows with their long sticks, and ever and anon urging him on with their singular tones of voice, so that the rider is compelled to allow himself to be carried along, contented with passing safely over so novel and (to him) apparently so impassable a roadway.

On proceeding out of Funchal, fruits, flowers, and vegetables seem crowding upon the sight; in the lower portions, groves of orange and lemon trees are mingled with the vineyards, the trees are loaded with fruit; then, as one mounts higher, bananas, figs, pomegranates, &c., are seen, and again, still higher, the fruits of the tropics are interspersed with those of the temperate zone, viz., apples, currants, pears, and peaches, while the ground is covered with melons, tomatoes, egg-plant, &c. Farther beyond, the highest point of cultivation is reached, where the potato alone flourishes. Then the whole lower portion is spread before the eye. Vineyards, occupying every spot that is susceptible of improvement, and one rides through paths hedged in with geraniums, roses, myrtles, and hydrangeas.

These plants, which we had been accustomed to consider as the inhabitants of our parlours and green-houses, are here met with in gigantic forms, and as different from our small, sickly specimens as can well be imagined. For those unacquainted with the luxuriance of the tropical vegetation, it would be difficult to conceive an idea of this favoured spot. Many of the terraces on which the vines are grown are cut on the sides of the hills, and the visiter cannot but admire the labour expended on the stone walls that support them. The road at times leads through small villages, the houses of which are built of blocks of lava, without plaster, about six feet high, with a thatched roof of broom brought up to a pole in the centre for its support, and of a moderate pitch.

Every one who visits Madeira should see the Curral. It is a very remarkable spot, and it is difficult, if not impossible, to give an idea of its beauty and grandeur. This place is approached by the usual ascent from Funchal, through the narrow roads, or paths

DESCENT INTO THE CURRAL.

hedged with roses, &c., the view gradually extending beneath, over the terraced vineyards. Just before reaching it you mount a small ascent; you are then on the summit or edge of the Curral, and the whole scene suddenly bursts upon you. The eye descends to the depth of two thousand feet, into the immense chasm below, and wanders over the ragged and broken outline of the many peaks that rise from its very bottom; then upwards, following the gray precipitous rocks, till their summits are lost in the clouds, which are passing fitfully across it, occasionally permitting the sunbeams to glance to its very bottom. One feels surprised, in gazing on this scene, that its character of wildness should become softened, and its beauty increased, which is effected in part by the plants and shrubs which cling or have fastened themselves into the fissures of the rocks. These the eye gradually makes out, and is led by the small and narrow strips of green on the ledges downwards, until it finally rests on the secluded church of Nostra Señora de Livre Monte, and the peasants' cabins embedded in the dark and luxuriant foliage beneath, whose peace and quietness are in such strong contrast with the wildness of nature above. The whole looks more like enchantment than reality. The shape of the Curral and its perpendicular sides give the idea rather of a gorge than of a crater.

In the descent the road winds along the sides of the precipice, turning around sharp and jutting projections, with a frightful gulf yawning below. A misstep of the horse would plunge the rider to destruction. At every turn new and striking views are brought out, almost surpassing in grandeur the first. The descent is so gradual, that one scarcely seems to advance downwards, and the length of time necessary to accomplish it (upwards of an hour) will give some idea of the vastness and grandeur of the scene. Continuing on, the gorge opens to the south, where the streamlet of the Curral, joined by several lateral branches, forms the river Socorridos, which empties itself into the sea at the ancient town of Camera de Lobos.

A party, consisting of Messrs. Drayton, Pickering, Couthouy, and Brackenridge, visited San Vincente, on the north side of the island. They describe the road to it as passing over projecting ledges, of which those unacquainted with a volcanic country can form but little idea. The first night the party stopped at Santa Anna, where they were hospitably entertained by Señor A. Accraiolis, who afforded them every comfort in his power. They were exceedingly well accommodated. The next morning they set out on their way to Pico Ruivo. On their road they encountered the forest of arborescent Heaths, some of which were found thirty feet in height and four feet

in girth at a height of two feet from the ground. These have by former travellers been reported as pines. Mr. Drayton's illustrative drawing of these remarkable trees is very characteristic.

After a fatiguing day's ramble, in which they collected many specimens, they returned to Santa Anna, quite wet, it having rained most of the day on the mountain. The next day they set out for San Vincente, their kind host furnishing them with a letter to Padre Jacinto Neri. Passing along the north side, over some of the most mountainous and broken parts of the island, though at the same time extremely beautiful, and in places well cultivated, they reached the pass at Estroza. This is particularly striking, winding around the precipitous cliff, almost overhanging the sea, several hundred feet below, and with its pinnacles reaching the clouds. The path around this bluff, which is only wide enough for one at a time, is a good specimen of the roads around the island. It has been worked with great labour, and made quite easy to travel by its zigzag direction. The feeling of insecurity to those who are unaccustomed to these mural precipices, with the extended ocean lying far beneath, serves to give additional interest to the scene.

To the plate of this pass, facing page 1, the reader is referred for a correct representation of the same.

They passed through several villages, all prettily situated, among which was Porto Delgada, and about sunset arrived at San Vincente. At Porto Delgada, their guides would not allow them to stop, as it was necessary to descend and pass along the rocky shore before the tide came in. They succeeded in passing safely, but were kept on the *qui vive* by the numerous stories detailed by their guides of the accidents that had occurred there. The road to this part of the island is little frequented by strangers, of whom only three are said to have visited San Vincente during four months.

On their arrival they found Padre Jacinto engaged at prayers. After his duties were finished he received them kindly, and accommodated them for the night. San Vincente is but a small village of fifteen houses, a chapel, and a distillery, in which, during the season, they make between four and five hundred gallons of brandy a day. As Padre Jacinto could not speak a word of English, they had but little conversation with him. However, a little Spanish on both sides, with gesticulations, enabled them to pass the usual compliments, and to obtain the requisite directions for proceeding back to Funchal on the next day. They were kindly and hospitably entertained by the Padre, and left him with many thanks for his kindness. Taking the road or rather path across to the Curral, they passed over a most

beautiful country, meeting with the gigantic virgin forests of Laurels, sixty feet high and four feet in diameter, and occasionally woods of arborescent Heaths, of equally surprising size with those they had seen the day before, in their journey across the island, farther to the eastward.

No traces of distinct craters were found on any part of the island they visited; the rocks were composed of volcanic breccia, and the surface of these was much decomposed.

The mountain-paths by which they crossed, are almost inaccessible in some places. The Madeira ponies were obliged to leap from rock to rock, frequently at an angle of 45° with the horizon. The lover of the picturesque will be amply gratified by pursuing the same route.

Another party, consisting of Messrs. Hale, Eld, Dana, and Holmes, went towards the east end of the island, as far as Canical, beyond Machico, to examine a bed of fossils, said to exist there. This proved to be a bed or deposit of coral, which will be spoken of in the Geological Report.

Passing through Machico, they saw and visited the small church or chapel, said to have been erected over the graves of the lovers, Anna d'Arfet and Robert Machim, the story of whose love and sufferings has long since been placed among the fabulous, though still credited in Madeira.

As their adventures are supposed to have led to the discovery of this island, it may be as well to give the history of them a place here, as recorded by Alcoforado.

It is as follows:

"In the reign of Edward the Third of England, Robert Machim, an English gentleman, became the lover of the beautiful Anna d'Arfet. It was long before their mutual attachment was known. When it became so, Machim's imprisonment was procured by the influence of her family, for his presuming to aspire to the hand of one so much above his rank. During his confinement, Anna d'Arfet had been forced into a marriage with a nobleman, who confined her in his castle near Bristol. By the assistance of a friend, Machim escaped, and induced her to elope with him, to seek an asylum in France. They sailed during a storm, which prevented them from gaining their intended port, and after many days of anxiety and suffering, they found themselves in sight of land clothed with the richest vegetation, and wild flowers in the greatest profusion. They determined to disembark, and experienced a climate of surpassing beauty, with birds of the gayest plumage. Whilst wandering a few days about in this paradise, there came on a violent storm, which drove the vessel from

the island. This was too great a shock for poor Anna, and she died soon after of a broken heart. Robert did not long survive her, and died, uttering as a last request that he might be laid in the same grave with his mistress, in a chapel which they had erected in commemoration of their deliverance from shipwreck. From the survivors, Alcoforado is said to have derived the story, they having left the island, (after many adventures,) returned to their native country, and gave accounts of the discovery of Madeira."

The country along this route is much diversified in surface, and extremely beautiful. The road is quite good and much wider, enabling two to ride abreast.

This party complained much of the inhospitality of the inhabitants. They could not get any accommodation whatever at Santa Cruz, although it contains three thousand inhabitants. They were told "that Santa Cruz was a very poor place," and that it would be better to ride on to Funchal. One of the inhabitants, of respectable appearance, told them there was an empty house which they could occupy, with permission of the owner. His offer was courteously declined, and the party rode back through a dark night to Funchal.

The islands of Madeira and Porto Santo, under the new constitution, promulgated in 1836, were included in one district, called "Districto-administrativo do Funchal." It contains ten councils, in which are forty-five parishes. The population, according to the census taken in 1836, is taken from the Cronica.

	PARISHES.	FAMILIES.	SOULS.	MALES.	FEMALES.
Funchal	9	5,975	28,653	13,444	15,204
Santa Cruz . . .	4	1,450	7,287	3,611	3,676
Machico	4	1,030	5,207	2,655	2,552
Santa Anna . . .	5	3,972	14,799	7,572	7,227
San Vincente . .	2	1,972	8,848	4,425	4,423
Porto Moniz . .	4	1,559	7,333	3,606	3,727
Calheta	6	2,731	13,133	6,341	6,792
Porto do Sol . . .	6	3,288	16,111	7,852	8,259
Camara do Lobos .	4	2,323	12,458	6,119	6,339
Porto Santo . . .	1	374	1,618	883	758
	45	24,674	115,447	56,508	58,957

The English population amounted in 1836 to 108 families, numbering 324 souls.

PROGRESS OF POPULATION IN 1835.

Legitimate births, male	1807	
Illegitimate " "	222	
		2029
Legitimate births, female	1868	
Illegitimate " "	205	
		2073
		4102
Deaths, male	1383	
" female	1368	
		2751
Excess of births		1351

Marriages 1065

The revenue of the island is stated to be about $210,000 per annum. That portion which is derived from the customs, is about one half, or $110,000. The remainder is from taxes and tithes. The latter are now collected by the government, and from it the priesthood receive salaries. The inhabitants are liable to pay tax for the maintenance of the small naval force kept on the station. The expenses of the government of Madeira, including the support of the military garrison, is about $150,000, leaving a surplus to the government of about $50,000 or $60,000.

There are about five thousand proprietors of the soil, of whom no more than six hundred and fifty live on their rents; and there are about four hundred who receive government salaries.

Mendicants are numerous, and one is much tormented with them from the very moment of landing. It is surprising to find them so importunate in so fine an island, and where the necessaries of life ought to abound.

Wine is the staple commodity: the produce during the year 1837 was 14,150 pipes. The export the year previous to our visit amounted to 8,435 pipes, of which about 3,800 pipes, valued at $793,000, went to the United States. The imports only amounted to $105,000, in staves, rice, and oil. The 5,700 pipes that remain, includes that shipped to Europe, the home consumption, and what is stored for refining. The inhabitants of Madeira are much alive and justly jealous of the reputation of their Wines, which are generally the engrossing topic of conversation. An amusing excitement existed during our visit. A London paper (the Times) had asserted that foreign wine had frequently been introduced into Madeira, and afterwards exported as the genuine article, to the United States in particular; and what gave more force to the story, it was stated as a fact, that seventy pipes had lately been

entered, at the expense of $1000, and remanufactured. Every body was up in arms. The commercial association of Funchal passed resolutions denouncing the publication in strong terms, as designed by certain interested persons to injure the reputation of the wine of Madeira. So strict are the laws to prevent frauds, that even genuine Madeira, after being once shipped, cannot be returned to the island. I heard, however, of an attempt, and but one, to smuggle in Teneriffe and Fayal wines, which was discovered. The casks were broken, the wine destroyed, the boats confiscated, and the smuggler condemned to be transported to the coast of Africa.

We were informed that the industry of the inhabitants had much increased within a few years, and since the new order of things: this is shown in the increased quantity of grain which is raised, viz., wheat, barley, rye, and Indian corn. Sugar and coffee are also raised, and of superior quality. All kinds of vegetables and fruits are in abundance, all of very fine kinds, and not only sufficient for their own wants, but to supply the shipping that touch there.

There are some things relative to the organization of the present government, that seem to forebode any thing but harmony in its operations. It is too complicated for an ignorant community, that cannot value the elective franchise. The system is somewhat a caricature of our own, in the frequency of elections, and the numerous small magistrates who have for the most part little or no emolument. I was told that instances had occurred of their refusing to educate their children, in order that they might escape being elected to an office, which would bring them nothing but toil and vexation. As they become more enlightened this prejudice will pass away.

The people are industrious, sober, and civil, and although ignorant, I should think happy. There is little, if any, mixed blood among them. They are of the old Arabian stock. Free negroes are seen. Dark hair, eyes, and complexion, are most common; but much diversity in form and feature, and in the colour of the hair exists. The character of the features of the inhabitants is usually rather a broad face, high cheek bones, and pointed nose, full lips, good teeth, and retreating chin. The men are very muscular, rather above the middle height, strongly built, and capable of enduring great fatigue. We all agreed that the women were particularly ugly, which is to be imputed in part to the hard labour required of them. The two sexes do not appear to belong to the same race.

The men of the lower order are dressed in a kind of loose trousers (cuecas), descending as far as the knee, with a shirt or jacket of a gaudy colour. Both sexes wear a kind of cap (carapuca), of very

small dimensions, tied under the chin. Its use is not readily conceived, as it is only a few inches in diameter at its base, and terminates in a conical top, like an inverted funnel.

The women wear bodices, with short petticoats of a variety of colours, in stripes. They have usually shoes and stockings, but they generally go barefooted, with these articles tied in a small bundle, to be put on when they wish to appear fine. The children are poorly clad, have but one garment, and that dirty.

The habitations of the lower order would be called huts in our country. They are composed of walls of stone, about five or six feet high, with a roof rising on all sides to a central pole, are thatched with straw or broom, and contain only one room. The only aperture for light and smoke is the door. There is but little necessity for chimneys, as fire is seldom required. It is said that in the northern part of the island, some of the peasants make their habitation in caves or excavations on the hill-side.

PEASANT'S COTTAGE.

In the town of Funchal, there are many elegant establishments, and much luxury among the higher classes, but the poorer classes are lodged miserably. The houses are generally of one story, of which the exterior is well kept, being neatly whitewashed; but the interior is any thing but comfortable. They have but one entrance. The floors are paved with round stones, and the walls are of rough stone, presenting no better an appearance than our wood-cellars. The furniture is scanty, and of the coarsest kind. Those of the peasants are more characteristic to the island. The wood-cut above is a good representation of their habitations.

Travelling is performed in sedan-chairs. This mode is always considered the safest for ladies, particularly in crossing the mountains. Horses and mules are seldom used. On leaving Funchal for the

country, it is one continued ascent between high stone walls, these forming abutments to the terraces, which are covered with vines, and afford protection from the sun. After reaching the hills, one enjoys a delightful view of the beautiful gardens. The roadsides are lined throughout with flowers, (to us, those of the green-house,) among them Fuchsias, Digitalis, Rose geraniums, Punica granata, Rosa indica coccinea, Hydrangea hortensis, mixed with box-trees, myrtles, &c.

The valleys are covered with the Belladonna lily, and the mountain-passes cannot be compared to any thing more appropriate than to a rich flower-garden left to grow wild. Added to all this, a climate which resembles our finest spring weather.

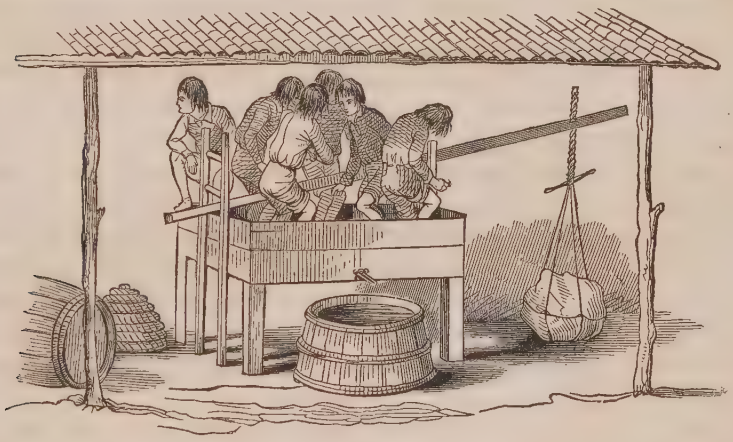
Such of the peasantry as do not gain a subsistence in the vineyards, have usually a small patch of ground which they cultivate, raising grain, corn, potatoes, and the taro (Arum esculentum), in quantities barely sufficient to eke out a scanty living. The cultivation is commonly performed by hand, although a plough of very simple construction is sometimes used. Many of the peasantry are employed as carriers, and one is much struck by their numbers when entering Funchal, early in the morning, with sheepskins filled with wine on their shoulders, that look at a distance more like the live

WINE-CARRIERS.

animal than a filled skin. These skins are preserved as entire as possible, even the legs of the animal being retained. They are generally kept steady by a band that passes over the forehead, which supports a great part of the weight. About twenty-five gallons, weighing more than two hundred pounds, is a load. They move

rapidly, and carry this load five miles for a mere trifle. To us, one of the most remarkable features in the population, was to see a female not only thus employed, but a stout mountain lass trudging up a steep path with ease, under a load that would have staggered one of our labourers, even for a short distance.

The manner of expressing the juice I have no where seen particularly described, and although a description of it may not add a relish to the cup, yet it will show the manufacture as conducted according to the old custom, at the present day. A friend of our consul was obliging enough to show us his works, and the machinery for expressing the juice from the grape. It was in a rude sort of shed. On our approach we heard a sort of song, with a continued thumping, and on entering, saw six men stamping violently in a vat of six feet square by two feet deep, three on each side of a huge lever beam, their legs bare up to the thighs. On our entrance they redoubled their exertions till the perspiration fairly poured from them; the vat had been filled with grapes, and by their exertions we were enabled to see the whole process. After the grapes had been suffi-



WINE-PRESS.

ciently stamped, and the men's legs well scraped, the pulp was made into the shape of a large bee-hive, a rope made of the young twigs of the vine being wound around it. The lever was then used, which has a large stone or rock attached to it by a screw. Much time is lost in adjusting this, and much consultation and dispute had. The juice flows off, and is received in tubs. The produce of the press is on an average about fifty gallons daily. Each gallon requires about two bushels of grapes. The taste is very much like sweet cider. The process is any thing but pleasing, and endeavours have been

made by English residents to substitute machinery, but the prejudices, vexations, and difficulties experienced, have caused them to give up the attempt. The general average is from one to three pipes of wine per acre annually.

The south side of Madeira, as is well known, although not the most fertile, produces the finest wines. Every point which can be cultivated successfully is attended to, and earth is brought to increase the soil from other parts. The kinds of grapes are various, and the wines manufactured as numerous. The common Madeira is obtained from a mixture of Bual, Verdelho, and Negro Molle grapes; the Malmsey and Sercial from grapes of the same name. There is a great difference in the spots and peculiar exposure where the vine grows, and different kinds of wine are produced, according to the state of maturity to which the grape is allowed to arrive at before being gathered. After being expressed, it is put into casks, undergoes the process of fermentation, is clarified with gypsum or isinglass, and a small portion of brandy is added, two or three gallons to the pipe.

The deportment of the lower classes is a mixture of politeness and servility. They invariably noticed us in passing by taking off the cap; and on receiving any thing, kissed their hands, or made some other respectful salutation.

The language spoken in Madeira is Portuguese, but with a rapid utterance, or rather, clipping or abbreviating of their words and expressions.

The ignorance of the common people seems great. Few can read, and still fewer write. It is said they are acquainted with no more than three coins, all of which are Spanish, namely, dollars, pistareens, and bits, and that many kinds of Portuguese coins current at Lisbon will not pass in Madeira. The want of a small description of money is much felt.

I directed a party of officers to make an excursion to the top of Pico Ruivo, in order to ascertain its height, and that of the several points on their way up. They remained four hours on the summit, during which time simultaneous observations were made at the consul's house by Lieutenant Carr and myself. They ascended by the Santa Anna road, which is the only one now said to be practicable. Punta d'Empeño, the highest point of cultivation, was found to be four thousand one hundred feet above the sea. The heights of other points measured will be found in the tables. The results of the observations give for the height of the peak above the American Consulate, six thousand one hundred and eighty-one feet. The

cistern of the barometer at the latter place, above half tide, was found to be by levelling fifty-six feet. Total, six thousand two hundred and thirty-seven feet above half tide.

The magnetical observations for dip and intensity were also made, and the longitude by chronometer was found to be, 16° 54′ 11″ W. Latitude by observation, 32° 38′ 11″ N.

The markets are well supplied with meat, poultry, fish, and all kinds of vegetables.

The bat noticed by Bowdich was the only one of the mammalia seen in a wild state. Of birds, two species of hawks, the linnet, the canary, the goldfinch, the yellow wagtail, and the swift, were all that were seen. Sea fish are abundant; but not a single trace of a fresh water fish was seen or found in the streams. Many specimens of crustacea, insects, and mollusca were added to our collections.

The ride to the Quinta of Mr. Bean at Comancha is one of the prettiest the island affords. It is towards the east end, and some eight or ten miles from the town of Funchal. For variety of scenery and the beauty of its grounds it is not exceeded by any on the island, and it gives a good idea of the effect of English taste when applied to the scenery and fine climate of Madeira. The road to it is the same that has been before described, passing through the gorges and around the different spurs, which gives great variety to it, and presents many fine views. Having a note of introduction from our consul, we stopped at Mr. Bean's gate and sent the servant in, who returned, informing us that Mr. Bean was not at home, but a kind invitation to enter was sent to us from his lady. We did so, riding through hedges of Fuchsias and Myrtles twelve feet high, when a beautiful little cottage on a small level spot burst suddenly upon our view, with its verandahs embosomed in creeping vines, and from the notes of various kinds of birds, one could almost have fancied oneself in an aviary. All united to give the impression that it was the abode of contentment. Several small lakes were partially seen, their dimensions being ingeniously hid from view. On one of them was seen a tiny fleet safely moored, on another, waterfalls, &c., &c.; the banks of others were surrounded with aquatic plants, among which was the Calla Ethiopica in full bloom. Then again we were struck with the dahlias, geraniums, roses, and jasmines, and the varieties of trees and shrubs from the tropics, besides willows, oaks, elms, &c., that were familiar to us. A view through the trees down the gorge to the distant ocean was beautiful, bringing before us all the bold scenery of Madeira: truly it was an enchanting spot. The grounds are extensive, and laid out with great taste, and each spot appeared

in keeping with the whole. The hill behind the house was found by the sympiesometer to be two thousand and ninety-eight feet above the level of the sea. The cottage had every thing to recommend it, in its library, &c., &c. All is enjoyed here that such a climate as that of Madeira, combined with taste and refinement, can give.

After a stay of a week, we had made all our repairs and arrangements which were necessary in consequence of our defective outfits, recruited the officers and men, and prepared for our departure.

Lest it should be supposed at home that I had exaggerated the state of the ships, I forwarded from Madeira to the Honourable Secretary of the Navy, as an ocular proof how defective our outfit had been, the iron hoops that had rusted off the pumps, and were found in the well-room of the Peacock. Captain Hudson's report relative thereto will be found in Appendix XV.

The diarrhœa made its appearance among the crews, but in dispensing with fruit it was soon stopped.

During our stay, the English schooner Star was seen drifting rapidly upon the Brazen-head, and was only saved by the timely aid of our boats. She was found to be without an anchor, and had been upwards of eighty days at sea from the coast of Africa. The garrison of Loo Rock, on seeing the boats proceeding to render assistance, fired several guns to prevent her being boarded. This would have effectually prevented her receiving any aid from the shore, but as our boats did not understand the signal, they went on, and succeeded in saving her from wreck, and supplying her necessary wants.

With a favourable wind we took our departure, after experiencing many kindnesses and attentions from our worthy Vice-Consul, Henry John Burden, Esq., whose house and time were entirely given up to us during our stay, and to whom I would beg to tender our warmest thanks.

MADEIRA BOAT.

CHAPTER II.

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SQUADRON SAILS FROM MADEIRA—CURRENTS—SEARCH FOR SHOALS AND VIGIAS—ARRIVAL AT ST. JAGO—APPEARANCE OF THE ISLAND—TOWN OF PORTO PRAYA—ITS POPULATION—LANGUAGE—VISIT TO THE GOVERNOR—PUBLIC FOUNTAIN—MARKET—DRILL OF RECRUITS—DROUGHTS—CLIMATE—SLAVES—DRESS—DEPARTURE FROM PORTO PRAYA—FURTHER SEARCH FOR SHOALS, ETC.—ARRIVAL AT RIO JANEIRO.

CHAPTER II.

PASSAGE FROM MADEIRA TO RIO JANEIRO.

1838.

On the 25th of September, having completed all that was deemed necessary, we sailed from Madeira, and stood to the southward, intending to pass over the localities where shoals were supposed to exist.

The morning after our departure from Madeira it was reported to me at daylight that the squadron were not in sight; as we had been making rapid progress throughout the night, I concluded that we had outrun the squadron, and hove to for them to come up. About eight o'clock they were discovered. On joining, I was informed by Captain Hudson that they had been becalmed for several hours, although we were near each other when the breeze sprang up. These veins of wind are frequent in this part of the ocean.

After passing the Canary Islands we experienced a current setting northeast by east, of about one fourth of a mile an hour, until we reached the latitude of Bonavista, one of the Cape de Verde Islands. This somewhat surprised me, for I had formed the idea that the set of the current should have been in the direction of our course; but many careful observations with the current-log, and the difference between our astronomical observations and dead reckoning, gave the same results.

It was my intention on leaving the United States to pass from Madeira through the Sargasso Sea, in order to ascertain something definite in relation to this unexplored and interesting locality, and to gain some information relative to the Fucus natans, or Gulf-weed, the origin of which has remained so long in doubt. Deep soundings in this part of the ocean I deemed would be very interesting, and afford an

opportunity of settling the origin of this plant, which is spread over the whole ocean; but my time did not permit me to make this deviation from our direct course, and I hoped on my return to have ample leisure for its exploration.

On the 29th of September, we passed into discoloured water, as green in appearance as that of fifty fathoms depth. On entering it the thermometer fell one and a half to two degrees. The distance run in it was about four hundred and fifty miles. Repeated casts of the deep sea lead were had in from two to three hundred fathoms, but no bottom found. The water was particularly examined for animalculæ, but none were detected. On leaving it a rise of temperature took place of two degrees; and much phosphorescence was seen when we had passed out of it.

The first shoal searched for was the Maria Rock, said to be in latitude 19° 45′ N., and longitude 20° 50′ W. In its neighbourhood our position was carefully ascertained. The vessels were then spread in open order, and a course sailed to pass directly over the spot. The surface of the ocean visible was not less than twenty miles in latitude with every opportunity which clear weather could afford. Good look-outs were kept at the masthead, and there was a sufficient swell to cause breakers on any shoal within fifteen feet of the surface. We ran over the locality without perceiving any thing that indicated a shoal.

The situation of the Bom Felix Shoal, laid down about ten leagues to the south of the above, was passed over in the same manner, sounding repeatedly for bottom with three hundred fathoms of line, but no appearance of a shoal was observed.

The reported position of the Bonetta Rocks next claimed our attention, in latitude 16° 32′ N., and longitude 20° 57′ W. After this locality had been well examined, a course was steered over its supposed bearing from Bonavista, one of the Cape de Verde Islands. The vessels of the squadron sounding every half hour during the night, which was clear and bright moonlight.*

On the night of the 6th of October, we hove to off the island of St. Jago. Seldom have we seen the sea exhibit so much phospho-

* Since our examination, I have seen a letter from the American consul at Porto Praya, F. Gardiner, Esq., detailing the wreck of the British ship Charlotte in 1841, and placing this shoal in latitude 16° 17′ N., longitude 22° 21′ W., 84′ in longitude and 15′ in latitude from the position I searched for it in; whence it appears that it is the same reef on which the Magdelaine was lost. I have no kind of doubt but that they ought all to be referred to the Hartwell Reef. The same gentleman was confident at the time I saw him that the Magdelaine had been lost on the reef of that name.

rescence. Its brilliancy was so great, that it might truly be said to have the appearance of being on fire. We made some experiments to ascertain the depth to which these phosphorescent animalculæ extended. After many trials they were not found below eighteen fathoms. The temperature of the water at that depth was 79°, at the surface 80°, and at one hundred fathoms depth 58°. The mean temperature of the air from Madeira until our arrival off this port, was found to have increased from 69° to 78°, while the difference in the water was from 71° to 81°.

On the morning of the 7th, we anchored in Porto Praya bay. The island of St. Jago presents a very different appearance from Madeira, particularly the southeastern portion of it, though its formation is known to be similar. There are many high peaks and mountains in its centre, which afford a fine background for the barren and uninteresting coast scenery.

PORT PRAYA, CAPE DE VERDES.

The time of our arrival was just after the rainy season, the island consequently presented a more verdant appearance than it does at other seasons of the year.

Our Consul, F. Gardiner, Esq., came on board and made us welcome to all the island afforded. An officer was despatched to call upon his excellency the governor, to report our arrival, who proved to be a black man. Knowing that the regulations required permission

for vessels to depart, the request was made during the interview, which he readily granted at any hour we chose.

The town of Porto Praya is prettily situated on an elevated piece of table land, and looked well from the anchorage.

The bay is an open one, but is not exposed to the prevailing winds. There is generally a swell setting in, which makes the landing unpleasant and difficult. The only landing-place is a small rock, some distance from the town, and under a high bank, on which there is, or rather was, a fortification, for it is now entirely gone to decay. It commands the bay, and is situated about two hundred feet above the sea. The horizontal stratification of the red and yellow-coloured sandstone shows most conspicuously in this cliff, and forms one of the most remarkable objects on this part of the island. It is of tertiary formation, and contains many fossils. I regretted extremely that my time did not permit me to make a longer stay, as we left the island under the impression that there is much here to be found that is new in the various departments of natural history. Between this bluff and the town is an extensive valley, in which are many date-palms, cocoanuts, and a species of aloe.

On landing, a stranger is immediately surrounded by numbers of the inhabitants, with fruit, vegetables, chickens, turkeys, and monkeys, all pressing him with bargains, and willing to take any thing for the purpose of obliging their customers. Many of them continue to follow until they meet with some new customer.

The soil, rocks, and every thing around on the surface, show unequivocal marks of volcanic origin. The rock above the tertiary formation is a thick bed of cellular lava, with fragments of the same strewn in every direction over it. A thin and poor soil gives but little sustenance to a light herbage. Goats and asses are found in great numbers grazing upon it.

The length of our visit did not permit us to make much examination, yet the character of the vegetation was unequivocally African.

The walk from the landing to the town is exceedingly fatiguing, and the road deep with sand. The first view of the town on entering it is any thing but striking, and all the ideas formed in its favour are soon dispelled. The houses are whitewashed, and in general appearance resemble those inhabited by the lower orders in Madeira, but they are much inferior even to them. The northeast part of the town is composed of rough stone houses, covered with palm leaves. The streets are wide, and in the centre is a large public square, the middle of which is occupied by a small wooden monument said to be emble-

matical of royalty! A chapel, jail, and barracks constitute the principal public buildings. The fort, which flanks the town, is almost entirely in decay. This is the case with almost every thing we saw here: the place is, indeed, little better than an African town. The houses are of stone, one story high, partly thatched, and others tiled. Their interior presents only a few articles of absolute necessity. Of comfort and cleanliness, in our sense of the words, they have no idea. The houses and streets are filthy in the extreme, and in both of them, pigs, fowls, and monkeys appear to claim, and really possess, equal rights with the occupants and owner.

The population is made up of an intermixture of descendants from the Portuguese, natives, and negroes from the adjacent coast. The Negro race seems to predominate, woolly hair, flat noses, and thick lips being most frequently met with. The number of inhabitants in St. Jago is about thirty thousand. Porto Praya contains two thousand three hundred, of which number one hundred are native Portuguese.

The language spoken, is a jargon formed by a mixture of the Portuguese and Negro dialects. Most of the blacks speak their native tongue. Mr. Hale, our philologist, obtained here a vocabulary of the Mandingo language, and found it to agree with that given by Mungo Park.

The officers of this garrison were, like the governor, all black. The latter made a brilliant appearance, dressed in a military frock coat, red sash, two large silver epaulettes, and a military cross on his breast. He was quite good-looking, although extremely corpulent, and speaks both French and Spanish well. He was very civil and attentive. Fruit, bread, cheese, and wines were handed about. Some of the wine was made on the island of Fogo, and resembled the light Italian wines. The cheese also was made here from goats' milk, and resembled the Spanish cheese. After doing ample justice to his excellency's good fare, we proceeded to view the lions of the place.

The first and greatest of these is the fountain, or common watering place of the town, above half a mile distant by the path, in a valley to the west of the town, and almost immediately under it. The fountain is surrounded by a variety of tropical trees, consisting of dates, cocoanuts, bananas, papayas, sugar-cane, and tamarinds, with grapes, oranges, limes, &c. &c., and when brought into comparison with the surrounding lands, may be termed an enchanting spot; but what adds peculiarly to its effect on a stranger, is the novelty of the objects that are brought together. Over the spring is a thatched roof, and round about it a group of the most remarkable objects in human shape that can well be conceived. On one side blind beggars, dirty soldiers, and

naked children; on another, lepers, boys with monkeys, others with fowls, half-dressed women, asses not bigger than sheep, and hogs of a mammoth breed; to say nothing of those with cutaneous disorders, &c. &c., that were undergoing ablution. All conspired to form a scene peculiar, I should think, to this semi-African population. Here sailors watering and washing, chatting, talking, and laughing; there a group of "*far niente*" natives of all sizes, shapes, and colours, half clothed, with turbaned heads and handkerchiefs of many and gay colours, tied on after a different fashion from what we had been accustomed to, the shawls being reversed, their ends hanging down behind instead of before, completely covering the breast, and one fourth of the face. What portion of this group had honoured the place in consequence of our visit, it would be difficult to conjecture, all were eager, however, to derive some benefit from the meeting, particularly the beggars, who are equally pertinacious with those found elsewhere, and are certainly great objects of commiseration. This well barely supplies the wants of the inhabitants and shipping, and they are now about building a reservoir. The whole of the stone for it was prepared in Portugal, and made ready for putting up. It is to be of marble. The water for its supply is brought two miles in iron pipes. It is said that it will cost $130,000, and is the only improvement that has been undertaken by government for many a year.

A market is held daily in the morning when any vessels are in port. The square in which it is held is quite a large one, with a cross in its centre. The market is not of much extent, but a great variety of tropical fruits, of the kinds before enumerated, are exposed for sale in small quantities, as well as vegetables. These consist of cabbage-leaves, beans, pumpkins, squashes, corn, potatoes, yams, mandioca, &c. All these were spread out on the large leaves of the cocoa-nut tree. No kind of meat was for sale. The only articles of this description were chickens four or five days old, tied up in bunches, and some eggs. In order to obtain beef, it is necessary to buy the cattle at the cattle-yard, where, on previous notice being given, you may choose those that suit for slaughter. They are in general of small size, and dark-coloured. Those we saw were from the interior of the island, where they are said to thrive well.

The morning drill of the recruits which was witnessed, was amusing. They were cleanly dressed, but the rattan was freely used by the sergeant, and what seemed characteristic or in keeping with appearances around, the sergeant during the drill ordered one of his men from the ranks, to bring him some fire to light his cigar!

No trades were observed, and but one small carpenter's shop. A

few shops were supplied with cotton, hardware, &c. There were likewise a number of little wine shops, where they also sold fruit, which they usually have in great plenty, but all their crops depend much upon the rains, and the inhabitants have also become indifferent or careless about raising more than for their own supply, from the heavy exactions of government made upon every thing that is cultivated. The demand for shipping has of late years very much decreased. The improvement in the supplies and comforts on board of vessels on long voyages, now make it unnecessary to touch in port, as was formerly deemed unavoidable.

Porto Praya is yet visited by whale-ships for supplies. Although the soil is poor, and the crops very uncertain, yet the tropical fruits and some vegetables can always be obtained here. They are usually, if time is allowed, brought from the interior. The inhabitants have at times suffered almost the extremes of famine, in consequence of the droughts that prevail for successive years, and especially during the one that took place in 1832. It gave me pleasure to hear that the timely aid sent there during its prevalence from the United States was remembered with gratitude.

The exports from these islands are salt, some ordinary wine, hides, goats' skins, and orchilla. The latter is a government monopoly. Ninety thousand milrees were paid by the company for the yearly crop, and it is said at that price to yield a handsome profit.

The climate of these islands is said to be healthy, though exceedingly warm. It is subject to fevers, which generally take place during the rainy months of July and August. There is an indistinctness in the atmosphere that I have not experienced elsewhere, which causes every thing to be ill defined, although the day may be fair. The same appearance was observed after a shower of rain as before. The temperature of the air was found here to be 75·7°, and of the water 81°.

The seine was drawn for fish in one of the coves to the eastward of the anchorage, in what we understood was a place well adapted for the purpose, but it did not prove so. I should prefer the western beach, as offering better luck and being more advantageous.

Bats were the only wild mammiferous animals seen here. For the short time we remained, our naturalists were actively employed, and many specimens were added to our collections in Ornithology, botany, shells, and zoophytes, with some fossils from the bank already spoken of.

Slaves are imported from the coast of Africa, and settlers or heads of families are not allowed to bring with them more than ten slaves.

There was one at the consul's, recently imported from the Foolah district in Africa, who was purchased by him for one hundred and fifty dollars.

The costumes here are so various that it scarcely can be said that any one of them is peculiar to the island. The men generally wear a white shirt and trousers, with a dark vest, principally the cast-off clothing of the whites. Others go quite naked, excepting a straw hat; others again are in loose shirts. The women have a shawl fastened around them, with occasionally another thrown over them, covering the mouth and bust, and crossing behind. The children for the most part go naked.

The Relief not having arrived, I deemed it an unnecessary detention to await her here. There was great necessity of reaching Rio de Janeiro as soon as possible, in order to complete our outfits, and put the vessels in fit condition to meet the Antarctic cruising as soon as possible. I therefore determined to proceed thither forthwith. The store-ship did not reach Porto Praya until the 18th, after a passage from Hampton Roads of sixty days. Nothing more truly illustrates the necessity of navigating in the prevailing winds, than this passage of the Relief compared with that of the squadron. We took the route by Madeira, over one thousand miles greater in distance, remained there a week, and yet we arrived at Porto Praya eleven days sooner. The Relief, pursuing the direct route, had light baffling winds during her whole passage. Although something is undoubtedly due to her dull sailing, yet the difference is too great to be entirely attributed to that cause. The winds were generally found by her from the northward and eastward, and southward and eastward, whilst we, in a higher latitude, had them from the southwest, and the westward.

On the 7th of October, we left Porto Praya, and stood for Patty's Overfalls, as laid down on the chart, in latitude 11° N., and longitude 24° 25′ W. In the afternoon we spoke the Danish brig Lion, from Rio de Janeiro. She had crossed the line in longitude 27° W., and had brought the trades to 6° 30′ N. We lost the trade winds the day after we left Porto Praya, the 8th of October, in latitude 12° N., and longitude 23° 30′ W. The winds then became variable, and squalls of rain ensued. The upper clouds had still a quick motion to the westward. On the same day we spoke the Crusader, seventy-five days from Bombay, which vessel was in want of medical aid. I sent the surgeon on board, and administered to their wants every thing that was in our power. It afforded us no small pleasure to supply

them with some fruit and vegetables, which were very acceptable to the numerous passengers. The Crusader had crossed the line in longitude 22° W., and lost the trades in latitude 7° 30′ N.

On the 9th we reached the supposed position of Patty's Overfalls, and were becalmed close in their proximity for forty-eight hours. Nothing was seen of them. We had passed through rips trending east and west, but no current was found on the trials which were made, nor did the reckoning show any. If any had existed, we must have been made aware of it during the time we were becalmed, for we remained nearly in the same position forty-eight hours. Thence we stood for Warley's Shoal. The weather had the same indistinctness that we had first observed at Porto Praya. It might be termed a dry haze.

In this part of the ocean we passed through spaces of water, from ten to thirty miles in width, in which the temperature of the water frequently rose three or four degrees. This increase seemed to me to indicate the existence of currents. I was, therefore, very particular in watching for them, and the only indication we had was of a very slight one to the southward and eastward. Our winds continued light and variable, and sailing in squadron, we had many opportunities of observing their different courses. On the 12th of October a remarkable one happened, in which all the squadron, while sailing with a brisk breeze from the southeast, were taken aback, and at one time all apparently had the wind from different quarters, although but a few cables' length distant from one another. The Peacock and Porpoise were very near running into each other. The whirl was in the direction of the hands of a watch. On the night of the 16th we parted company with the Peacock, and on the 17th spoke an English whaler, seventy days from New Zealand, by the way of Cape Horn, who reported he had lost the southeast trades in latitude 6° 55′ N., longitude 21° 10′ W.

On the morning of the 18th, thirty falling stars were seen in as many minutes, shooting in all directions from the constellations Gemini and Taurus. On board the Peacock, some sixty miles to the westward of us, they were much more brilliant, and in greater numbers.

On the 22d, several common European swallows were seen about the vessels.

The 24th, we reached the position assigned to Warley's Shoal, in latitude 5° 4′ N., longitude 21° 25′ W. The vessels were spread as before described, in open order, covering as much space as possible. We passed over the supposed locality, but saw no appearance of

shoal water, or danger of any kind. Here we experienced westerly winds, and took advantage of them to make easting. After we had lost the trades, in latitude 12° N., I observed, when the upper stratum of clouds could be seen, that they were passing from east-northeast, with rapidity to the westward.

We now ran for the French Shoal, in latitude 4° 5′ N., longitude 20° 35′ W. Here the wind inclined to the southward, and we proceeded as far east as longitude 13° W., passing over the two positions laid down by the French and English hydrographers, but saw nothing of it.

We now tacked to the southward, to cross the equator in longitude 17° W. The weather had changed, the rains which we had experienced at night ceased, and the extremely indistinct atmosphere which at times had prevailed for the last fortnight, disappeared. It is difficult to describe the peculiar effect this haziness produced. It seemed to me an effect the opposite of that of looming, apparently diminishing all objects. Although the horizon was seen, yet the sea and sky were so blended together, that it was difficult for the eye to fix upon or define it at any moment. It was impossible to use the dip sector. At the same time it was perfectly clear over head, with a bright sun, and the upper cirrus clouds, when seen, were in rapid motion to the westward.

The quantity of rain that fell between 9° 30′ and 5° north latitude, was 6·15 inches during ten days. The greatest fall in twenty-four hours was 1·95 inches. The temperature of the rain on several trials varied from 69° to 72°, that of the air being at the time 77°.

The nights were now beautiful until near morning, when it generally clouded over, and remained overcast with flying clouds until evening. The zodiacal light was once or twice observed, but the presence of these clouds for the most part prevented it from being seen.

On the 29th, in latitude 3° 40′ N., our observations gave a current of ten miles in twenty-four hours, to the north. Until the 3d of November we had light winds; the upper stratum of clouds was now seen moving from the east. On the 4th we had a cry of breakers from the masthead. We immediately changed our course and ran for the appearance, but it proved on nearing it to have been one of the many optical illusions seen at sea, from the effect of light and shadow.

On board the Peacock, on the 30th of October, in latitude 1° 30′ N., longitude 18° W., they witnessed a remarkable appearance, resembling the aurora borealis, radiating from the northwest point of the horizon in different directions, and extending from southwest round by the north to the eastward, at an altitude of from 10° to 50°; afterwards

reaching to the zenith, and passing over the moon's disk, encircling her with a faint halo of twenty degrees in diameter. It continued an hour, and although it was bright moonlight, the phenomenon was very distinct and beautiful.

On the 5th, the winds drew to the south-southeast, and we crossed the line, as we had intended, in longitude 17° W., which enabled us to pass over and examine the supposed locality of the Triton Bank, in longitude 17° 46′ W., latitude 00° 32′ 00″ S. The current was found this day to be setting to the northeast, fifteen miles in the last twenty-four hours. This night the sea was extremely brilliant, showing in large luminous patches. The light proved to be occasioned by a large species of Pyrosoma, some of which were ten inches in length, and two inches in diameter. Many phosphorescent animalculæ were taken, and some rips that were seen, exhibited long lines of brilliant light. Temperature of water 76·5°. Our dipping-needle on the equator gave 23° 30′. Hourly observations were made for forty-eight hours, to ascertain the oscillations of the barometer under the equator (for which see Appendix XVI.) The periods of oscillation were found to be as follows: the maxima at nine A. M. and nine P. M., and the minima at three A. M. and three P. M. The variation was ·1 of an inch, and was found to be very regular, from latitude 3° 30′ N., to 4° S.

We had now heavy deposits of dew, on several fine and cloudless evenings. Indeed the sun had scarcely set before the ship was quite wet with it. One of the essential requisites supposed necessary by Dr. Wells for a deposit of dew, was certainly wanting in this case, viz., that "the temperature of the body on which it was deposited, should be considerably lower than the surrounding air;"—the temperature of the air and ship having remained the same for several days at about 78°: all objects, hammock-cloths, spars, sails, and rigging, so far as could be ascertained, showed the same. And at the time when the dew was observed to be most copious, we had a fine breeze. It has generally been supposed that dew never falls off soundings. This at least is an old saying among seamen: but our observations are at variance with this notion; for, as far as every indication went, both by sounding and blue water, we certainly had no bottom.

The supposed position of the Triton Shoal was now passed over, and examined carefully in the same manner as heretofore described, sounding at the same time with two and three hundred fathoms of line. Nothing of the kind was perceived, nor was there any indication of soundings in the discoloration of the water, or any change in its temperature.

We next sailed for a *vigia* laid down on the chart.

On the 7th November at noon we were in longitude 18° 20′ W., and latitude 3° 30′ N. Here we first experienced the influence of the equatorial current, and found it setting west by north at the rate of half a mile per hour. This vigia was not seen. I then stood for Bouvet's Sandy Isle, or its reported position. We saw nothing of it whatever. I was very desirous of continuing my search farther to the west, from the report I had seen of various vessels having experienced shocks of earthquakes, and the belief having been entertained that shoals might have been formed by them. The equatorial current having been felt, I was aware that in getting farther to the west, I should lose the opportunity of examining the locality where that distinguished navigator, Admiral Krusenstern, supposed he saw a volcano. I therefore gave up proceeding farther to the westward in this latitude, and hauled up for its position.

It was now the 9th of November; we had delightful weather; and moderate breezes from the south and east.

An amusing circumstance occurred this night. In our course we passed very near a large sail, which from the night being dark, the officer of the deck of the Porpoise mistook for the Vincennes, although sailing on a different course. He immediately, agreeably to his orders, followed the vessel, and continued after her until morning, when, to his surprise, he discovered that it was a large Dutch ship. Fortunately, I had perceived the ship pass, and conjectured, when we found the Porpoise was not in sight at daylight, the nature of the mistake. I therefore retraced my steps, and in an hour or two we again came in sight of her, then tacked and proceeded on our course. On the next day, the time being very favourable, we hove-to, to get a deep-sea sounding with the wire line, and ran out one thousand six hundred fathoms of it. On reeling it up, the wire parted, and we lost nine hundred and sixty fathoms of line, with our sounding apparatus, including one of Six's self-registering thermometers. The wire was badly prepared and ill adapted to the purpose.

On the 11th we found ourselves near the location of Krusenstern's supposed shoal, ran over the position in parallel lines, and satisfied ourselves of its non-existence.

Having now examined all the localities which were designated in my instructions, I made all sail for Rio de Janeiro.

We now found ourselves in the equatorial current, setting us west twenty-five miles in twenty-four hours.

On the nights of the 11th, 12th, and 13th, we kept a watch for the periodical showers of stars. About thirty were seen in the mid-watch

of the 13th, proceeding from the Pleiades, and shooting in a northerly direction. Our position was in latitude 6° 15′ S., and longitude 24° 25′ W. The Peacock, whose situation was about forty miles to the westward of us at the time, saw a number shooting from the constellations Orion and Leo. The equatorial current was now strongest, setting thirty miles in a day to the westward; the breeze had become very steady and strong; the upper current was found to correspond with the direction of the lower. Every day the wind was observed to freshen as the sun was coming to the meridian, and continued so until the afternoon, when it died away again, freshening after dark, and continuing until near daylight.

On the 16th of November we passed the magnetic equator in latitude 13° 30′ S., longitude 30° 18′ W. The variation was found by careful observations to be 10° 30′ W. We continued to pursue our course rapidly, experiencing the current setting more to the southward, and upwards of twenty miles a day.

On the 22d we made Cape Frio; here we fell in with and boarded the ship Louisiana, in fifty days from New York, and were much gratified by getting letters and papers.

The progressive temperature on the passage from the Cape de Verde Islands to Rio, was as follows: it rose until it reached its maximum in 9° 24′ N., water 83·5°, whilst the air was at 81·6°; from thence to striking soundings, it decreased to 75°, and on soundings 69°.

The soundings obtained off the cape were in fifty fathoms, ouze and shells, the water changing its colour to a deep green, and as we approached the harbour, to a dark olive. On the afternoon of the 23d of November, we took a light wind from the southeast, and with all sail set stood in for the magnificent harbour of Rio Janeiro. Our attention was drawn first to the high, fantastic, and abrupt peaks of Gavia, the Sugar Loaf, and Corcovado, on our left; whilst on our right, we had the bold point of Santa Cruz; then before us the city of San Salvador, and the towns of San Domingo, with Praya Grande opposite, and the islands and fleet that lay between them decking this beautiful expanse of water. These objects, with the pinnacles of the Organ Mountains for a background, form such a scene that it would be difficult to point out in what manner it could be improved. The life and stir created by the number of vessels, boats, and steamers of various forms and of all sizes passing to and fro, give great animation to the whole.

The mountains present a very peculiar appearance. Their tops and sides have a rounded or worn surface, destitute of verdure, with the exception of here and there a yellowish patch, produced by the

Tillandsias, which in places cover the rocks. The abruptness of the Sugar Loaf Mountain, and those immediately behind Santa Cruz, strikes the spectator very forcibly.

The shipping do not form as in other places a dense forest of masts. There being no wharves, they are obliged to lie at anchor, exhibiting their proportions and symmetry to great advantage. They are usually seen grouped together, with their different flags flying, forming a picture that a painter would delight in.

As we proceeded up the harbour, our own flag was seen to wave over that magnificent specimen of naval architecture, the Independence; and as we passed her, our bosoms beat to the tune of Hail Columbia, played by the band.

There is a feeling of security on entering the harbour of Rio, that I have seldom experienced elsewhere, not even in our own waters. The mountains seem as it were to afford complete protection from the winds and ocean. We anchored near Enxados or Hospital Island, and found the Peacock had arrived here three days before us, and that she was proceeding with her repairs rapidly. The vessels being altogether unfit for the southern cruise, it became necessary to effect the requisite repairs as speedily as possible. While I could not but deprecate the loss of time and the shortening of the season for our southern operations, I felt it an imperative duty that I owed to those who were engaged with me on this service, not to suffer them to go among the many dangers of our southern cruise badly provided with the means to secure them against ordinary accidents, and to encounter the weather we must necessarily anticipate.

On our arrival I was told it was the beginning of the hot season, and that rains usually prevailed during the coming months. This was unpleasant news, particularly as I was desirous, whilst making the necessary repairs on the vessels, to complete a set of astronomical observations, and to perform a series of experiments with the pendulums, &c. This information, however, I did not find to be correct, and from the examination of the meteorological tables (see Appendix XVII.) obligingly furnished me by John Gardner, Esq., an American gentleman residing at Rio, I am not disposed to credit this common saying. It therein appears that rain falls as often in other months as in December, and my experience during the time of our stay corresponds with these tables. The first fortnight we had occasional rains, but before we left the harbour our parties reported that the country was suffering from drought.

Mr. Gardner has also obligingly favoured me with a table (see Appendix XVIII.) showing the monthly average of passages from the

United States to Rio during eight years, from 1834 to 1841. The shortest passage occurred in the year 1835, and the longest in 1840. The former by a very fast vessel in twenty-nine days; the latter by an ordinary merchant-ship in ninety days. The Relief, our store-ship, had one hundred days in 1838! but this includes touching three days at the Cape de Verdes.

It will be seen that the average monthly passage does not vary but a few days throughout the whole eight years. The winter months are the most favourable, in consequence of the strong westerly winds that prevail in the North Atlantic at that season, and also to the prevalence of the northeast monsoons on the coast of Brazil.

Our observations would point out the necessity of dull-sailing vessels not crossing the equator to the westward of 20° of west longitude, where the equatorial current begins to be felt; but vessels that sail well, may cross it as far as 26° W., particularly when the northeast monsoons prevail in their full strength, and very much shorten their passage by such a course.

During the repairs, I endeavoured to employ my time and that of the officers and scientific gentlemen in as advantageous a manner as possible. We are indebted to the Hon. William Hunter, our charge d'affaires, and our consul, William Slacum, Esq., for many kindnesses and attentions received during our stay. Through their intercession, I obtained the use of the small island of Enxados, which was well adapted to our purposes. The instruments and stores were allowed to be landed there free of inspection, and every assistance we could desire was afforded us by the government and its officers. How different a policy and treatment from that pursued towards Captain Cook some seventy years before, under an ignorant and jealous colonial government!

WATERING PLACE, PORTO PRAYA.

CHAPTER III.

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CITY OF SAN SALVADOR—ITS IMPROVEMENT—ITS PRESENT CONDITION—CHURCHES—THE MISERICORDIA—FUNERALS—EMPEROR'S BIRTHDAY—AQUEDUCTS—GEOLOGICAL CHARACTER OF THE COUNTRY—PUBLIC GARDEN—MUSEUM—BAY AND HARBOUR—VEGETATION—BOTANIC GARDEN—SLAVE POPULATION—COFFEE-CARRIERS—RESEARCHES INTO THE NATIONS OF AFRICA—TREATMENT OF SLAVES—STREETS OF THE CITY—SOCIETY—WHITE-JACKET BALL—ARRIVAL OF THE RELIEF—ASCENT OF THE SUGAR LOAF—SURVEYS—DEFECTS IN THE EQUIPMENT OF THE SQUADRON—TRIP TO THE ORGAN MOUNTAINS—JAUNT TO PIEDADE—CONCLUSION OF THE SURVEYS AND OBSERVATIONS—ASCENT OF THE CORCOVADO.

CHAPTER III.

RIO JANEIRO.

1838.

The city of San Salvador, better known as Rio de Janeiro, has been often described. At the time of our visit a great change appeared to have taken place within a few years, as well in its outward appearance as in its government and institutions, thus giving to the whole a different aspect from that it formerly wore. Under its former monarch, Don Pedro the First, it had all the aspect of a court residence; now it is the very reverse. I shall, therefore, give my own impressions, and sketch a picture of its state as we found it in the latter part of the year 1838.

Republican forms, habits, and customs, are gradually creeping in under its new and reformed constitution. It is not to be denied that the people now appear to be much better off than formerly, and more at liberty to carry on their lawful pursuits. Commerce, and intercourse with foreigners are every day making liberal advances. Every one, on his first landing at Rio, will be struck with the indiscriminate mingling of all classes, in every place, all appearing on terms of the utmost equality;—officers, soldiers, and priests, both black and white, mixing and performing their respective duties, without regard to colour or appearance. The only distinction seems to be that of freedom and slavery. There are many wealthy free blacks, highly respectable, who amalgamate with the white families, and are apparently received on a footing of perfect equality. The police, too, consisting of a national guard, has taken away those forms of military parade that formerly existed. An air of independence is creeping in even among the working-classes. Any little service that is required, and for which they are well paid, they appear to consider as a favour done you. The mechanical arts are at least half a century

behind those of our own country. The churches, which are numerous, are falling into decay, which gives a dilapidated look to the city; its religious ceremonies are dispensed with, and to crown all, the steps of the churches are made a market-place for the sale of sheep, pigeons, fruit, &c. To judge from appearances, and the attendance on its services, there exists little religious feeling towards the Roman Church. It is true, the same constant ringing of bells occurs that is to be heard in all Catholic countries, and other outward signs are still kept up; but the priesthood are not regarded with such awe as they formerly were, and society seems to be breaking through the trammels that have so long enslaved the female portion of it. Religion is a mere name among the youth of Brazil. The aged are still observant of its ceremonies, but little or no attention is paid to the Sabbath. The stores do business, and the workshops are open the same as on other days. A few are seen going to worship in the morning of that day, but a greater number attend the billiard-tables in the afternoon, and the theatres at night. There is an Episcopal church, and a missionary of the Methodist persuasion from the United States resident here.

We saw Rio de Janeiro under its most favourable aspect, that of the holidays, when the church had put on all her finery and decorations, and every one, slave as well as master, seemed intent upon enjoying himself. The Christmas week or holidays give a respite from all labour, and various are the amusements. The churches are decked, and the services extraordinary.

The neglect of the public walks and roads shows a want of proper attention, and strikes the visiter as different from the usual order of things around a court. So far as cleanliness goes, Rio, I should think, is not much improved. It has every advantage to make it a clean city, but the inclination appears to be wanting. Neither do I intend to assert that its style of building is changed. Although the government is doing little, one sees the spirit of enterprise among the citizens. Many private dwellings are being erected, and I understood that many other improvements were taking place.

The houses of the city are strongly built of stone, cemented together with clay; this is used in consequence of the scarcity of lime, which is only obtained by burning shells fished up from the bay. The houses are plastered on the outside, and have a pretty appearance and colour. The floors, beams, and roofs, are made of the hard wood of the country, of great size and strength, which are indeed necessary from the great tile roof they have to bear. Very few of the houses have yards, cellars, or gardens: consequently the dwellers are still greatly incommoded from the want of water-closets, detrimental both to health and

comfort, and not only an annoyance and inconvenience to the inhabitants themselves, but is shared by the stranger in passing through the streets.

We of course saw all that was to be seen in Rio. The churches claimed our first attention. They are richly decorated in the interior, with massive gold and silver ornaments, and at this time glittering with gems and precious stones. On some of the altars of the saints it is the practice to suspend the diseased parts of the body in wax, in honour of the cure supposed to have been effected by the saints' intercession. The sight of these is truly disgusting, although they are far from being well executed. The chapel of St. Cecilia was visited on the saint's day, 25th November. The music was very fine, from a large choir, consisting, besides the organ, of flutes, hautboys, horns, and basses of all kinds, with about ten vocalists, two of whom were eunuchs, about seventy years of age. The music consisted of selections from the best masters. The performers were about seventy in number. The steps of the church and the street were strewed on this occasion with orange-leaves. A number of females present were seated on the floor of the church, dressed in black, with white lace shawls, and wreaths of flowers round their heads. Fireworks, as usual in such ceremonies, were set off in front of the church at the beginning and end of the service.

The Misericordia has now become much out of repair, and I understood had fallen off in its charitable usefulness, but it still shows the remains of its former splendour. Few monks were seen about, and dead bodies were laid out in the Green House. At the time we visited it there were eight, the greater part of whom were negroes. A monk was seen saying a hasty prayer over the bodies, which were at once thrown into the trench, when they were sprinkled with lime, placing one layer over the other, until the hole, about six feet square and as many deep, is filled or level with the surface. After one of the trenches is filled, another is dug by the side of it. The crowded state of this place of interment is but too evident from the number of skulls and bones lying about, some still with portions of flesh adhering to them.

On the same evening, whilst this scene was still fresh in our minds, and as if in strong contrast with it, we met the funeral of a person of distinction. A black hearse, ornamented with black plumes, was drawn by mules. The driver had a cocked-hat and black plume. The coffin was covered with a scarlet pall ornamented with silver. About twenty altar-boys, in their church dress, preceded the hearse, which was surrounded by about the same number of black servants.

in livery, all carrying lighted wax candles. The body, on arriving at the Imperial Chapel, was removed into it, and all who entered the chapel were furnished with lighted tapers. Mass and the funeral service were performed by the priest, and some delightful music by a full choir. The body was then taken into the Campo Santo, a kind of amphitheatre, with high walls, a short distance from the church. About a thousand vaults are built in the wall. One of them was opened, the body interred, and the wall built up again. The centre of this sepulchre is laid out in a flower-garden, and is about one hundred feet in diameter.

December 2d was the birthday of the Emperor, Don Pedro the Second, who then was thirteen years old. It was celebrated with all due pomp. Great preparations had been making for many days. He was to pass into the city from St. Christoval, his usual residence, in procession, and to hold a levee at the city palace. The streets were strewn with orange and other leaves, a triumphal arch erected, &c. But a description of his progress will give a better idea of it.

Having left St. Christoval, he entered the city about noon, preceded by a large troop of horse. He rode with his sisters, one sixteen, the other fourteen years of age, in a splendid English carriage, with bronze and gold mountings, drawn by eight cream-coloured horses, gaily caparisoned, with silver-mounted harness, the servants in rich liveries. Three carriages, drawn by six horses each, followed, containing officers of state and his household, the whole surrounded by the Emperor's guards, and above five thousand military following. Great crowds of people had assembled to witness this parade. As the carriages passed under the balconies, garlands of flowers were thrown upon them. They entered the principal street through a triumphal arch, beautifully decorated with natural flowers, on which were placed two little boys, dressed in blue and pink, with wings to represent angels, each holding a basket of flowers, which they threw on the young monarch as he passed. The houses in the streets through which the procession moved, were hung with satin damask draperies of the richest tints. These I understand are kept expressly for such occasions. At short intervals national flags were suspended across the streets. On the custom-house the flags of every nation were seen, in the centre of which was the Brazilian, and next to it the "star-spangled banner." The Emperor moved on, receiving the same marks of affection from his subjects until he reached the great square and palace, where he alighted. The troops forming around the square soon came to order, and a general pause ensued, until the firing of the

feu de joie began, one of the most deafening I ever heard. He finished this public exhibition by showing himself to the multitude below, from the balconies of the city palace, and was received with many *vivas*.

He then held his levee, which the Rev. Mr. Walsh has so well described, and which closely resembled the one at which he was present, with this difference, that this was much more of a farce, in consequence of the boyhood of the Emperor. Nothing can be more ridiculous than to see all the dignitaries, and old men, the mitred bishop, the sage diplomatist, and the veteran soldier, ushered into the presence, and out again, without saying a word, or turning their backs on the young monarch. Mr. Walsh has, however, said nothing about the scene in the ante-room; to me it was the most ridiculous of all. The arranging the order of entrance to the presence, with due form and etiquette; the examination by each diplomatist, that he has his due order of precedence; their anxiety to gather their suites around them, not unlike a hen with her chickens, to make the fullest show; all prepares one for the ridiculous scene that is to follow. The oldest resident minister always takes the lead. At night the city was illuminated.

Rio is now well supplied with water. Aqueducts have been finished within the last two years, which bring it from the Corcovado and Tejuca Mountains, a distance of six or seven miles. There are a number of public fountains in different parts of the city. All the water for the supply of families is transported by slaves, who are constantly seen about these fountains. Until the amount of toil and time occupied is seen, little idea can be formed of the saving of labour that hydrants and pipes, for the supply of this necessary article, effect. These fountains have numerous jets, and some have pretty edifices over them. During the day, there are seldom less than fifty to one hundred, both male and female, water-carriers around them, filling their jars, with which they are seen moving about poised on their heads. Near the large fountain called Hafariz, in the square of Santa Anna, are two large basins, about fifty feet long and twenty-five wide. These are commonly filled with about two hundred negro women, who daily assemble to wash. Numbers of them are half naked, standing up to their middle in the water, beating and thrashing the clothes against the stone wall, to the great destruction of buttons, &c.

Few articles are transported in any other way than by slaves, and it is extremely rare to see a cart drawn by any beast of burden. Antique-looking carriages and two-wheeled calescas are generally seen.

It is impossible to remain long at Rio without noticing the geolo-

gical structure of the country. It is all granitic, and occurs in vast blocks. Dr. Pickering and Mr. Brackenridge, who visited the Organ Mountains, reported that the country was of the same general character, but on a much grander scale.

The garden at the water side is delightfully situated. From this point the bay offers amusement at all hours. I should think the people of Rio might be classed among the indolent, and that they are not fond of walking; for the garden appears to be but little frequented.

The museum is open twice a week: it is quite creditable to the city, and well worth seeing. It appears to attract more attention from the inhabitants of Rio than I should have been led to expect. It is extremely rich in its native collections, and is well taken care of.

The theatres, of which there are three, are seldom open on week days, but always on Sunday.

The sail up the bay is beautiful. The surrounding picturesque peaks, varying their outline with every change of position, give it great variety, and the objects are so interesting that one is never tired. The many islets that stud this bay add greatly to its beauty, and excite interest, covered as they are with tribes of tropical plants, all new to the eye. Among these are seen tufts of Bromelias and Cactus, while Orchideæ plants were abundant on the rocks and trees.

This bay is usually covered with small boats, passing to and fro, felucca rigged, without decks, and generally about twelve tons burden. These boats are rowed by blacks, who are seen toiling at their task. The oars are large, the men row in a standing posture, and thus add the weight of their bodies to their strength. At times, the bay seems alive with the number of these vessels, and of small canoes, each made of a single trunk, which are used in fishing. Many of these vessels are also engaged in the coasting trade. Foreigners are usually employed to take charge of the latter, which sail under the Brazilian flag. Steamers are beginning to be used. One plies between Rio and Santos, and during our stay, another left the harbour for Montevideo. The greater part of the vessels in the bay are under foreign flags, and I was much surprised to observe how few comparatively are English, and how many are from the north of Europe.

The harbour of Rio may be considered as not extending farther than Enxados Island, above which few vessels lie. The front of the city is not well adapted for wharves, and none consequently exist. There are some stairs; but they are not well protected from the sea, which at times renders landing almost impossible.

The environs of the city were visited by many of our naturalists and officers, and although this ground has been so often gone over by

others; it was yet found to offer many objects of interest, and we believe of novelty, particularly in the waters of this bay.

In Rio, the vegetation seems to fix the attention above all other things, especially of those situated as we were in the harbour, having it continually before one's eyes; and I can well understand the deprivation Sir Joseph Banks and Dr. Solander must have experienced in their visit. Our naturalists remarked that although the productions are still American in character, the same families prevailing, often the same genera, yet they were entirely distinct in species from those of other parts of the continent. As an example the Furcrœa takes the place of the Mexican Agaves. The Furcrœa is a peculiar plant, and attracts attention by its bayonet-shaped leaves, branching up in every direction; some of these are ten or twelve feet in height and ten inches in diameter. This plant, with the well-known Cecropia, with its candelabra branches, and the prevailing yellow blossoms of the trees, give a peculiar and lively character to the landscape and woods, when compared with the dull sombre hue of our own forests.

Here, as in all tropical climates, the truth of the remark made by a botanist, "that every thing grows into shrubs and trees," is obvious. Herbaceous plants are rare, and annuals may be said to be almost wanting. The fruit trees were generally seen bearing fruit and flowers at the same time. This was the case, as observed by one of our party, even in the cultivated apple on the Tejuca Mountains.

The vegetation near the coast differs considerably from that of the inland country. Plants are more dense and succulent, species and tribes have little of a local nature; yet particular kinds of palms and bamboos are found in separate groups on the top of the Organ Mountains, but this is only a slight exception to the general rule, which nature seems to have adopted in the distribution of plants over the country. This character strikes the observer forcibly in the Cecropias, Cæsalpinia brasiliensis, and several Melastomas, which are rarely seen in pairs.

The Botanic Garden is in a flat situation, backed by a high ridge of mountainous land. In front, is a lake of brackish water, which forms a considerable bay, and communicates with the sea by a narrow inlet. The entrance to the garden has a mean appearance, and does not correspond with the broad promenades within, which are planted with trees on each side. The whole is laid out in the old Dutch style; seats, arbours, and houses are cut out of Arbor vitæ (*Thuja orientalis*). Terrestrial Orchideæ are cultivated in earthen vases placed in rows in the herbaceous ground, which appeared to have been once planted after the Jussieuean, or natural system, but is now some-

what out of order. In the centre of the garden was a small fountain, near which grew some fine specimens of the splendid Bougainvillea bracteatea, in full flower. There is also a fine collection of Orchideæ, which are cultivated on decayed trunks of trees. The bread-fruit trees (*Artocarpus incisa*, and *integrifolia*) succeed very well. There were some trees of both kinds forty feet high, and the fruit of the latter as large as an ordinary watermelon. The rows of trees along the sides of the walks were principally Apeiba hispida, Theobroma cacao, several kinds of Lauraceæ and Myrtaceæ, with a species of Casuarina, introduced from New South Wales. Several groups of bamboos had a good effect among the other trees, but their stems bore evidence of a propensity to the carving of names, as a memento of the distinguished persons' visit. Among them I was glad to see the names of many Europeans, which serves to prove that this habit does not exist among Americans alone. Here an attempt was made some years since to introduce the tea-plant, with natives of China to cultivate it. The plantation appeared to our botanical gentlemen in a sickly state.

The great and distinctive characteristic of Rio may be said to be its slaves and slavery. This evil continually presents itself to the observer, and he cannot, if he would, divert his attention from the many sights which keep it before his mind.

The slave population is stated at five times the number of that of the whites, and notwithstanding the existing danger of maritime capture, the supply still seems equal to the demand. Although many slavers are taken by the English cruisers, brought in and tried by the mixed commission, agreeably to treaty, yet means are found to introduce the slaves. Two slavers were lying in charge of the English squadron while we were there. On board of them, though quite small vessels, were two and three hundred negroes. It is difficult to imagine more emaciated, miserable, and beastly-looking creatures, and it is not a little surprising that they should be kept thus confined by those who affect to establish their freedom and ameliorate their condition. These vessels it is understood had obtained their victims on the eastern coast of Africa.

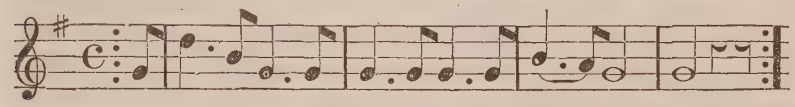
Slaves are almost the only carriers of burdens in Rio Janeiro. They go almost naked, and are exceedingly numerous. They appear to work with cheerfulness, and go together in gangs, with a leader who carries a rattle made of tin, and filled with stones, (similar to a child's rattle.) With this he keeps time, causing them all to move on a dog-trot. Each one joins in the monotonous chorus, the notes seldom varying above a third from the key. The words they use are frequently

relative to their own country; sometimes to what they heard from their master, as they started with their load, but the sound is the same.

Repeated several times.

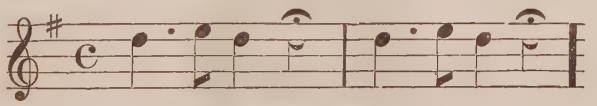
Ve na ca - a man - yan a a Par a can tar sen hor a.

Another.



COFFEE-CARRIERS.

The coffee-carriers go along in large gangs of twenty or thirty, singing—



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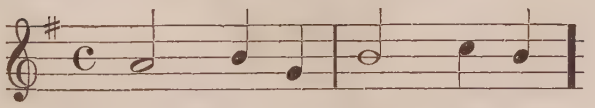


One half take the air, with one or two keeping up a kind of a hum on the common chord, and the remainder finish the bar.

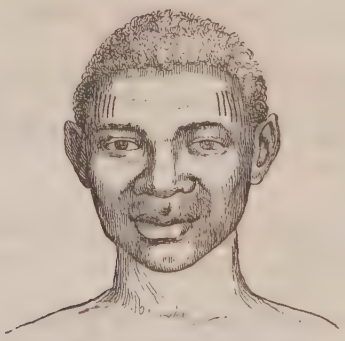
These slaves are required by their masters to obtain a certain sum, according to their ability, say from twenty-five to fifty cents a day,

and to pay it every evening. The surplus belongs to themselves. In default of not gaining the required sum, castigation is always inflicted.

It is said that the liberated negroes who own slaves are particularly severe and cruel. The usual load carried is about two hundred pounds weight.

Mr. Hale, our philologist, found here a field of some extent in his department, through the slave population; and it afforded more opportunities for its investigation than would at first appear probable. Vast numbers of slaves have been, and are still imported annually into this market; and as very many of the same nation or tribe associate together, they retain their own language, even after they have been in the country for some years. It may be seen by the most cursory examination that they are marked in such a manner as to serve to distinguish their different races. Some have little of the distinctive negro character, and others more of it than any human beings we had seen. Mr. Hale obtained from a gentleman of Rio the following information respecting them, with their distinctive marks; the accuracy of which we had an opportunity of verifying during our stay. The likenesses made of them by Mr. Agate are very characteristic.

The negroes of Brazil who have been brought from North and South Africa, are divided into two distinct and very dissimilar classes. The natives of that portion of the continent known under the general name of Upper Guinea, include the countries in the interior as far as Timbuctoo and Bornou, being the whole of that region lately explored by the English expeditions. The slaves from this quarter, though of various nations and languages, have yet a general likeness, which stamps them as one race. In Brazil they are known under the name of *Minas*.



MINA.

The Minas slaves are said to be distinguished from others by their

bodily and mental qualities. They are generally above the middle height, and well formed. The forehead is high, and the cheek-bones prominent; the nose sometimes straight and sometimes depressed; the lips not very thick; teeth small and perpendicularly set; the hair is woolly, and the colour an umber or reddish brown, approaching to black.

The look and bearing of the Mina blacks are expressive of intelligence and dignity, and they betray little of the levity usually ascribed to the negro race.

In Brazil they occupy the highest position that slaves are allowed to attain, being employed as confidential servants, artisans, and small traders. They look down upon, and refuse to have any connexion with, or participation in, the employment of the other negroes. Many of them write and read the Arabic, and all can repeat some sentences of it. The greatest number of slaves who purchase their freedom belong to this race.

There is one singularity which seems to be common to the inhabitants of both regions, and which may be compared with the practice of tattooing which prevails throughout the tribes of Polynesia, viz., the custom of cutting or branding certain marks upon the face and body, by which the individuals of one tribe may be distinguished from those of any other. This practice is general among all the Minas, and also prevails along the eastern or Mozambique coast of Southern Africa. Among the western or Congo tribes it does not appear to be universal. It will be readily understood that these marks are of great service to the slave-traders, and all that have much to do with native Africans soon learn to distinguish them; and the price of a slave is depressed or enhanced accordingly. Among the Mina nations, so called after a port on the Slave Coast in Upper Guinea, where these slaves are obtained, this practice is carried to its greatest extent. Each province or city of importance has a distinct brand or mark, which is invariable for all the inhabitants.

Of the tribes speaking the Houssa language, the Goobere, or Guberi, from the kingdom of Bornou, have three or four marks on each side of the mouth, converging towards the corners.

Those from the town of Kano, inhabited by a population of traders, have several perpendicular and parallel marks on each cheek.

The same mark prevails among the people of Kashua and Labbi, neighbours of the foregoing.

The Soccatoos, or Sakatus, on a branch of the Quorra, have several fine long oblique marks, converging towards the corners of the mouth.

Dawwarra or Dawara: these have parallel oblique lines, drawn to the corners of the mouth, with shorter marks meeting or bordering them above and below.

The men of the Nago or Yarribe nation, on the west bank of the Niger or Quorra, below the Houssa, have three or four longitudinal marks on each side of the mouth.

Those of the women are more complicated.

The Tacqua, otherwise called Nouffie or Nyffie, live on the eastern side of the Quorra, opposite the former, and have two or three oblique lines drawn to the corners of the mouth.

The Fantees and Ashantees inhabit that part of the coast of Guinea known as the Slave Coast, and the country in the interior. The former have no distinguishing mark; the latter are characterized by scars produced by burns on the forehead and cheeks.

ASHANTEE.

The Minas are held in much fear in Brazil. They are extremely numerous at Bahia, and it is understood, that during a late insurrection, they had fully organized themselves, and were determined to institute a regular system of government. They had gone so far as to circulate writings in Arabic, exhorting their fellows in bondage to make the attempt to recover their liberty.

The Calabars, on the Gulf of Benin, near the mouth of the Quorra, are marked with two lozenge-shaped brands on the breast and stomach.

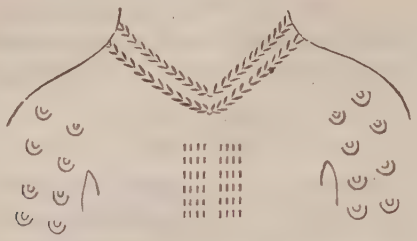
The Eboes live near the preceding, at the separation of the mouths of the Quorra. Their mark is an arrow on each temple. The town of Ebo is a great mart for the surrounding country.

The nations to the south of the equator, have the usual form of the negro, agreeably to our ideas. Those of the slaves at Rio de Janeiro, are, in general, short, badly formed, or clumsy, with narrow foreheads, flat noses, protruding jaws and teeth, and prominent cheek-bones, with the chin sloping backwards. They are indolent, thoughtless, and licentious. They may be seen in the streets at all hours, employed as carriers, earning the stipulated sum for their masters. And when this is gained, they are to be found stretched out on the sidewalk, under the porticoes, or on the steps of churches, enjoying themselves as mere animals, basking in the sun or sleeping in the shade. They are not deficient in intelligence: the defect is less in their intellectual powers than in their character, which appears to want energy.

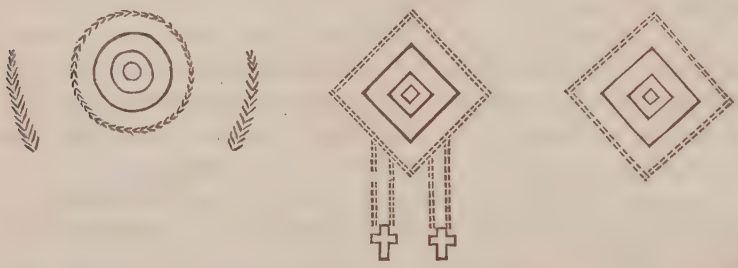
Tattooing, or marking, does not prevail among the tribes of Lower Guinea to such an extent. The Kambindas, who border immediately upon the Minas, appear to have borrowed from them the custom, but employ it rather for the purpose of ornament than as a mode of distinguishing their origin. The marks or figures with which they brand themselves are various, and sometimes ornamental. They are called in Brazil, Kambindas, after the town on the river Zaire or Congo, at which they are procured.

Of the Sundi or Mayomba, who live immediately north of Loango, between latitude 3° and 4° S., some have a row or band of small cicatrices coming from each shoulder to the centre of the breast, like the ends of a pelerine; others have various arabesque ornaments.

Those who come from Buali, the capital of the Loango district, in about latitude 4° 30′ S., have marks like the preceding, on the breast, and others on the arms.



Towards the south, tattooing is less common, and among the Goy or Angoya people (the Kambindas proper), few but women are so ornamented. Their marks are characterized in the three figures appended.



The Angoyans, however, file their teeth after a peculiar fashion, each tooth being cut down or filed in the centre, so that only the sides are left standing; the contiguous sides of the teeth form a single saw-like tooth.

The inhabitants of the town of Embomma, on the north bank of the river Congo, are distinguished by the teeth being filed so that each tooth forms a point.

The Mundjola, a savage tribe, live in the interior, beyond the Loango district, with whose inhabitants they are constantly engaged in wars, made expressly to procure slaves. They are esteemed the least valuable of all the blacks imported into Brazil, being stupid, ferocious, and intractable. In Africa they are stigmatized as man-eaters by the other negroes. The Mundjola have the usual negro features, with somewhat of a Tartar expression. Their cheeks are furrowed longitudinally by numerous parallel lines.

Of the exact geographical position of the Mundjola, no definite

information was known. The part of the continent which they are said to inhabit is still unexplored; the account which one of them gave Mr. Hale was, that he had been three days with his captors in canoes, from his native place, M'te, situated on the great river Muote, before reaching Loango, where he embarked. It is probable that M'te is in the interior, two or three hundred miles northeast of Loango, and that he was brought to the coast by the Zaire river; but in this wild unexplored ground, all is yet conjecture. The next town or tribe to M'te he called Mudimbe.

MUNDJOLA.

The extensive territory, bounded on the north by the river Coanza, in latitude 9° 20′ S., on the west by the Atlantic, on the south by the Great Desert, which interposes between it and the country of the Hottentots, and reaching to an indefinite distance in the interior, is known under the name of Benguela, or as the natives pronounce it, Bengera. Over this extent of country, comprising at least half of Lower Guinea, the same general language is supposed to prevail, though subdivided into several dialects.

BENGUELAN.

The Benguela blacks have a much higher character as slaves than

the other nations of Lower Guinea. They are next in estimation to the Minas, being steady, industrious, and intelligent. They make excellent husbandmen. They are generally of good height, with features having less of the negro stamp than those of the Congo: the forehead tolerably high, the nose not much depressed, and the lips moderately full.

The extent of the Congo territory is now comprised between the Zaire and Dande rivers, or about two hundred miles of sea-coast. These limits define with sufficient accuracy the extent within which the Congo language prevails.

CONGO.

The Congoes file their teeth after the fashion of the Angoyas. Sometimes, though not often, they have a few marks on each temple.

The Angola and the Kasanji are considered in Rio as of different nations, but their languages are the same, with hardly a dialectical

KASANJI.

difference, and it is extremely soft in pronunciation. Some of the natives found great difficulty in enunciating sounds of the Portuguese, saying *balaba* for *barba*, *cibali* for *cidade*. Though the Angola and Kasanji spoke the same language, yet there was a considerable difference between the dialects of two Angolas, the one from Loando on the coast, the other from M'baka, or Ambacca, about three hundred miles in the interior.

From the best information, it is believed that the only distinction between them is, that the Angolas are under the domination of the Portuguese government, and the Kasanji are the free natives of the interior.

The former inhabit a narrow province, from sixty to eighty miles in width, between the two rivers Dande and Coanza, and extending inland something more than one hundred leagues, or as far as the Portuguese power can make itself felt; the latter, commencing at this point, are spread over a large territory in the interior of the continent. One of the natives stated the time it took to go from Loando (the Portuguese seaport) to Kasanji to be three months, and to return, two; the former journey, as far as it was made in boats, being against the stream.

The eastern coast of Africa, from the equator to the Hottentots of the Cape, is occupied by two nations or races of people, which, though bearing marks of a common origin, are yet perfectly distinct. Each of them is subdivided into several minor tribes or clans. The first of these may be called the Mozambique or Makua, and the second the Caffre race.

MAKUAN.

The Mozambique or Makua tribe, are the people who possess all the country inland of the Portuguese and Arab settlements, Melinda, Quilao, Mozambique, Quilimane, and Sofala. They occupy the country which was formerly comprised in the empire of Motapa, but is now divided between the Portuguese and several native provinces. The

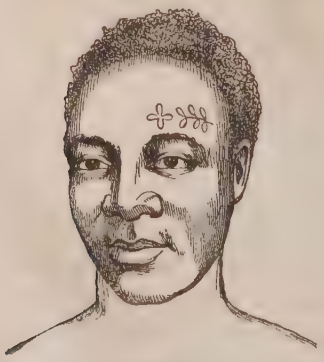
southern boundary of this people appears to be the river Inhambane, which empties into the Indian Ocean, near Cape Corientes, under the southern tropic. The negroes who inhabit the country near the Portuguese settlement of Mozambique, are the Mozambique or Makuans: they differ little in their character or bodily conformation from the Congo tribes on the opposite coast. They have the negro physiognomy and qualities in their full extent, and perhaps are, if any thing, rather lower in the grade of intellect than their brethren of the west.

The custom of marking prevails among all the tribes of the eastern coast. The Mozambique people are distinguished by a scar like a horseshoe in the centre of the forehead, with others somewhat different on each side. They have other marks of a similar nature on the chin, and a large brand in the shape of the letter S covers the breast; their teeth are filed sharp, each tooth making a separate point.

The Takwani dwell on the great river Zambezi, at whose mouth Quilimane is situated. This was formerly the line of division between the northern or barbarous Makuans and the territories of the Motapa. Although this empire is extinct, the countries south of the river still preserve some political connexion. All this region was formerly termed Mocacougua by the Portuguese. The Takwani, by way of marks, have several groups of dots or scars imprinted in various parts of the forehead, and also on the breast.

Takwani is situated four days' journey up the river Zambezi.

The natives of Mesena have also the same marks; they inhabit the country round the Portuguese fort Sena, on the Zambezi, and were formerly part of the great kingdom of Motapa.



TAKWANI.

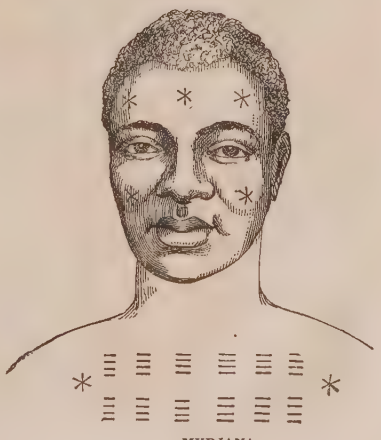
CAFFRE PROPER.

The Caffres who are found as slaves, are generally slender and well made, with faces partaking slightly of the Moorish cast. Their colour is a yellowish brown, between that of a mulatto and true negro. The nose is not depressed, the lips are rather thick, the eyes large, black, and bright, and the hair woolly. Two divisions of the Caffres have been described by the various authors who have written of them and their dialects. These tribes they have divided into the Caffres proper, to the east of the colony of the Cape of Good Hope, extending from the Great Fish River as far east as Delagoa Bay, in latitude 26° S.; and the Bechuanas, to the north, inhabiting the interior as far as the tropics, and the country of the Wanketsi.

The country between Delagoa Bay and Sofala, Mr. Hale, from his investigation, believes to be inhabited by another race of Caffres, which he designates by the name of Nyambana. He remarks, that their language and physical traits belong to the same family with the Caffres proper and the Bechuanas. Their physiognomy is similar to that described as distinctive of the Caffres, and their language proved to be a sister dialect.

The natives whom he met with, and from whom this information was derived, came from the town of Okankomatta, on the coast, between the Nyambara and Nyango rivers, in about latitude 24° S., and from Kamouanawankushion, the river of Nyampara, in the interior. The distinctive personal mark of this tribe is the most extraordinary of any. It consists of a row of artificial pimples or warts, about the size of a pea, beginning in the middle of the upper part of the forehead, and descending to the tip of the nose. Of these they are very proud. The manner in which these singular elevations were produced we were not able to learn. The natives appeared to be averse to speaking of it.

NYAMBANA.



MUDJANA.

The Mudjana or Mutchana are one of a number of savage tribes who inhabit the country inland of Makua and Mocacougua, with whom they carry on a continual war, for the purpose of procuring slaves. The best known of these are the Mudjana, the Mananji, the Maravi, and the Makonde. The Mudjana dwell about three hundred miles from the coast, and are among the ugliest of the African tribes. They are short and ill-formed, with the usual negro features in their most exaggerated forms. They have on the face and body cicatrices in the shape of a double cross or star, disposed without regularity. The incisions are made when they are children, and some kind of wood is rubbed upon them to give a dark colour.

The Mokonde, similarly located, have marks like to those of the Mudjana. Their teeth are filed down in the centre, the sides of each tooth being left like those of the Angoyas.

All these blacks are from different parts of the coast, and having been hostile tribes, retain much of their antipathy to each other. In general they are kindly treated, and become firmly attached to their masters; more, however, from a clannish feeling than from gratitude, of which virtue they seem to possess little. They are baptized by their owners as soon as purchased, and in the cities attend mass regularly, and go to confession, but they are never thought to become entirely civilized. Those who receive their freedom in reward for faithful services, or purchase it, conduct themselves well; their descendants are much superior in point of intelligence. Many of them own slaves, and prove much more severe masters than the whites. Male slaves are put to any trade or craft they may desire. Females are for the most part employed as mantua-makers, and almost all the finery worn by the higher circles at public *fêtes* is made by slaves. Indeed, many masters and mistresses are dependent on the labour of their slaves for their daily support. There are some blacks who are priests, and others officers in the army; indeed, some of the deputies would not pass for white men elsewhere.

Another remarkable circumstance that strikes the visiter is the absence of beggars. Many disgusting objects may be seen among the slave population, but I do not recollect having met with a beggar. I have understood that they are not suffered to appear in the streets. This is the law in almost all cities, but here it is rigidly observed. Charitable institutions are extensively endowed, particularly that of the Misericordia.

The streets of the city generally cross each other at right angles. Some few of them have sidewalks, but they are narrow and badly paved. The gutters are in the middle of the streets, with a stream of water which emits a smell by no means agreeable. Those most

frequented are the Rua Direita and Ouvidor. The former, containing the palace and cathedral, is the broadest in the city. In the latter are the principal shops, and it is the gayest. The streets are paved with blocks of stone. The houses are for the most part two stories in height, and notwithstanding the materials are strong, yet the red tiled roofs overhang in places fearfully. The interior of the houses will not bear inspection. Ceilings, walls, and floors, are all exceedingly rough. In those of the better kind, the walls and ceilings are plastered, and have ornamented designs painted in fresco. Silk hangings are much in vogue. I was struck with the want of light and ventilation in the rooms and houses. The city in some parts has a triste appearance, but in others there are few places which show so much stir and bustle, particularly when it is considered that wheeled vehicles are not used for transportation. What gives Rio its principal charm are its suburbs and the small quintas around it. Nothing can exceed the beauty of those around Gloria and Botofogo. These situations are generally occupied by foreigners established here in business.

CORCOVADO, FROM BOTO-FOGO BAY, RIO.

The amusements of riding and fishing, with water excursions, are frequent, and of the most agreeable kind. These and other advantages of so fine a climate, soon render a residence at Rio quite desirable. There is much pleasant foreign society, composed of the diplomatic

corps, many retired gentlemen, and generally the officers of the several men-of-war of different nations. I had the pleasure of meeting some old friends, and the time I could spare was very agreeably spent in their society.

There appears to be but little intercourse between the Brazilians and the foreign society. The female sex particularly is still much restricted in this respect, and although great improvement has taken place, yet they seldom mix in social intercourse with foreigners; I am told that even among themselves they are seldom seen except at ceremonious parties. They are very much as one would expect them to be, reserved, retiring, and wanting in education. They dress after the French fashion, and are usually covered with finery, often displaying splendid jewels, without taste. There is none of that ease and gaiety which exists where the fair sex is considered on an equality with the other, and there is a total absence of that tone which a consciousness of their value gives to society. Though there is a great advancement in their education, yet there is still much room for improvement. Formerly they were not allowed to be educated at all. Their usual place of resort during the afternoon and evening is the balconies of their houses; some of them are occasionally seen at church. It is said they soon lose their beauty, an early age being considered as their prime.

It gives me pleasure to bear testimony that I witnessed an exception to the above general rule.

Among the many places to which we had the honour of an invitation, was the White-Jacket Ball, at Praya Grande, so called in consequence of a request being made on the card of invitation, that the gentlemen would come in white jackets, and the ladies appear without brilliants or other jewels. We gladly accepted the invitation.

The row across the bay was beautiful; the water undisturbed by any breeze; the air cool and balmy; while thousands of lights along the shores, and the phosphorescence of the water, gave additional interest and brilliancy to the whole. The distance, though great, was not too much for so beautiful an evening.

After being once or twice at fault, we at last found the landing, and walked a short distance from the beach. On reaching the ante-room, we were met by the committee of gentlemen or managers, and kindly greeted without ceremony, making us at once feel at our ease. We were shortly after ushered into one of the most splendid ball-rooms I ever saw; it would contain over one thousand persons. There were upwards of three hundred present, all dressed in pure white, without any finery whatever. The room was brilliantly lighted. We were shown around and introduced to a great many

persons of both sexes, who all seemed bent on amusement. It was truly a *sans souci* meeting. Seldom have I seen so much good taste as was displayed in the arrangements, or so good a tone of society. A good band of music, all Brazilians, played waltzes and marches alternately. I was told there were many distinguished persons, senators, representatives of the congress, &c., present.

These balls take place monthly, and are really what they profess to be, for the pleasure of meeting, innocent amusement, and recreation. All the expense that attends them is the music and lights; some few dulces were the only refreshments.

The language generally spoken was Portuguese, though some few of the ladies, and many of the gentlemen, spoke French. I was not much struck with the beauty of the ladies, though many were quite pretty. The great charm thrown over the whole was the unaffected manners and *naïveté* exhibited by the whole company. I left the ball at a late hour, exceedingly gratified with my visit, and the politeness and kindness that had been shown us.

On the 27th of November the Relief arrived, after a passage of one hundred days from the United States, the longest ever made. On requisitions being made for her stores, I was greatly and vexatiously disappointed to receive a report that they required a survey, as all were considered defective, including even the bread and flour. This report, after a careful survey by seven officers, proved to be true. I had been informed before taking command of the squadron that these provisions had been inspected, and understood them to be in good order, and that they would last over a year.

Although this did not delay us, for the repairs in progress could not have been completed before we would be able to replace them, yet coming as it did with other vexations and delays, it was rather trying to the patience, and made it necessary to redouble our exertions.

The Relief was despatched at the earliest day possible, the 14th of December, in order to enable her to reach Orange Harbour, in Terra del Fuego, the place I had fixed upon as a rendezvous, supposing she would take at least fifteen days more than the other vessels to reach the place at the same time. The boats towed her down the harbour and gave her a fair start.

Two of the officers of the squadron ascended the Sugar Loaf. Hearing the expression of my surprise that they should have performed such an undertaking without instruments, they immediately volunteered to make it again. Lieutenants Underwood and Dale were furnished with the requisite instruments, and the height was obtained by the sympiesometer, which agreed within a few feet of

that obtained by triangulation. The results will be found in the table.

Not having time to complete all they desired, some of the party remained over night to complete the interesting observations. Lieutenants Emmons and Underwood, on their first trip, obtained many interesting botanical specimens, among them Bromelias, Tillandsias, &c.

On the 16th, the Peacock, with the two tenders, sailed for the purpose of measuring the distance between Cape Frio and Enxados observatory. I had first determined to measure the distance by rocket-signals, as the distance, lying nearly east and west, rendered this method very applicable; but the duties I was engaged in, and the difficulties I might encounter from delays, prevented me from having recourse to it. I therefore adopted that by sound, wishing also to satisfy myself with what accuracy a length of this distance could be measured in this manner.

Captain Hudson was also ordered to examine the St. Thomas Shoal, to the northward of the Cape.

The manner of accomplishing the former duty was as follows. The three vessels were anchored in a triangle, with the light-house in sight, two vessels being in range with it, nearly east and west, towards the harbour of Rio. Each vessel firing four guns, the times of the flashes and reports of which were noted in the others. The angles were simultaneously observed between the objects, and the astronomical bearings taken. This gave the data to connect the survey with the light-house.

The vessels now changed their positions alternately, anchoring in range, and on astronomical bearings proceeding westward, until they reached the island of Enxados, where they again formed a triangle in connexion with the observatory.

Our repairs in Rio were extensive, particularly those on the Peacock. Among other things, the head of the mizzen-mast had to be cut off eighteen inches, in consequence of a defect in it, which it appeared had been filled up with rope-yarns and putty, and painted over, at her outfit. The defects about the vessel were so glaring that in going to the high latitudes, it would have been impossible to secure the crew from great suffering and exposure. Even in the state in which the squadron was now put, I had every apprehension of the greatest disasters. The Peacock, particularly, was wholly unseaworthy with respect to such a cruise.

My object in giving these details is not to impute blame to any one, however satisfied I may be of the great neglect in all the outfits, but

to let the country know what were the difficulties we had to encounter.

It is always difficult to calculate upon the delays that may occur in a foreign port, particularly when it is necessary to employ foreign workmen. Their hours, habits, and manner of working, are so different from our own, that great patience is required in those who employ them. The manner in which the calkers of Rio work, would draw crowds around them in one of our own cities; to see many of them engaged on a single seam on the outside of the vessel, striking the mallet at a signal given by their leader or overseer with his whistle, is amusing. They are generally blacks, (probably slaves,) and the leader a white man. The impression made upon us all was, that they were an indolent set; yet they are said to understand their business well. I cannot, however, bear favourable testimony to their work; the calking of my ship was certainly badly done.

The uncertainty of the length of time I should be detained, rendered it impossible for me to allow long absences from the ship. I was anxious to have made some measurements of the Organ Mountains, and that our parties should extend their researches beyond them to the Campos.

Dr. Pickering and Mr. Brackenridge succeeded in making the trip to the Organ Mountains on a botanical excursion; but the outfits and duties connected with the vessels and observations, made it impossible for me to spare any officers to make the measurement of their height, or to go myself. These gentlemen set out, having taken passage in the usual freight-boat, (felucca rigged,) for Estrella, embarking their horses and mules in another. These boats are not decked, and are of sufficient tonnage to make them safe and convenient freight-boats. They generally have four or five slaves with a padron to manage them.

On leaving Rio they steered up the bay for the island of Governador, round which it is necessary to pass, on their way towards the river Anhumirim, aided by a fair breeze and fine weather. They found the sail up the bay extremely beautiful, the islands offering a constant source of interest and novelty. The mouth of the Anhumirim river was reached in about three hours. It was found about forty yards wide and quite shallow. The banks are an extensive mangrove swamp. They passed up the river about eight miles, and reached the port of Estrella at midday, where they took their horses and pursued the main road to the mines, which crosses to the westward of the highest peak. The distance to the base of the mountain

from Estrella, is about ten miles, due north. The country is flat, with occasional undulations. About two miles from Estrella they came to a guard-house, where they were stopped. Their guide not being at hand, and not understanding the language themselves, they supposed their passports were demanded, and believing the reports to be true that we had all heard so often of the jealousy of the Brazilians in relation to the admission of foreigners into the interior, they concluded they were now to experience it. But on the guide coming up, the matter was soon arranged by the payment of a small tax, which was the only passport they found necessary. The ascent of the pass is made by a well-paved zigzag road. They soon reached the house of Padre Luiz, where they were kindly and hospitably received, and supper was supplied them from his scanty larder.

Padre Luiz's house was quite spacious: a long one-story building, containing under the same roof the stable and storehouse, as well as accommodations for travellers and the females of the family. The latter, agreeably to the custom of the country, were not seen, though known to exist. Cold and wet, our travellers were ushered into an apartment where there was neither floor nor fire, and in which there was a free circulation of air through the cracks and crevices in the walls. The roof, however, was tight, which was lucky, as it was raining hard. A little further insight and experience into the customs and comforts of the country, made them think that the accommodations here had been excellent. After a most unreasonable delay, coffee, a fowl, and rice were set before them, with much parade and ceremony. During the night they heard what was supposed to be the howling monkey, but upon inquiry it turned out to be a Brazilian toad, called in Brazil "the blacksmith," whose croak is said to resemble very much the sound of hammering on an anvil.

The next morning, understanding that they had been treated with luxuries and as persons of distinction, they told their host that they preferred the dish of the country, "carne seca" and "farinha," which, with the addition of a few eggs and a cup of coffee, made an excellent meal, and was quickly served.

They rode this day about twenty miles beyond the Organ Mountains, the extent to which their jaunt reached. On their way, they met vast numbers of mules heavily laden. The roads were generally good, and very little expense would have made them excellent for carriages.

At Padre Coneas', at the top of the pass, they found a native fig-tree, of enormous size, with numerous parasitical plants upon it. It

was to them quite a novelty from its low branches, which extended horizontally and covered a space of one hundred and forty feet in diameter.

After leaving the Estrella Pass, the descent was very gradual, the route lying among the mountains. Crossing the river Paibanha, they reached a hamlet beautifully situated on the brow of a hill, and commanding an extensive view of the country. Here they found the place well suited to their employment of making collections of plants, and resolved to stop. Their host kept a small store, and had a German for salesman, who was greatly delighted at finding that Mr. Brackenridge could speak his language. He paid them great attention, and provided amply for their wants.

They were gratified by the rich botanical field that was open to them. Among the plants, or trees, were Cupheas, with deep purple flowers, and others with lilac; Lobelias fifteen feet high, with spikes of blue flowers three feet long; and Acacias in full flower. Cyrtopodium Andersonii grew on the rocks in bunches, &c. Several trees of the Araucaria Brasiliensis, from seventy to eighty feet high, were found in the valley, which Mr. Brackenridge succeeded in climbing, and obtained two handsome cones. The rivers were also searched for shells, but the water was too high to afford success.

Returning at dark they found the German had provided supper, which was soon served. It consisted of bean soup, Indian bread, fried jerked beef, and sausages: they had the satisfaction of eating the meal on their knees, for there was no table, but one spoon, and only one knife for three persons.

Having loaded themselves with specimens, they concluded to return, their ideas of life in tropical climates having undergone much change in this short time, from the erroneous belief they had entertained that industry was not necessary, that the inhabitants were surrounded by luxuries, having every delicacy imaginable, and that the only reason they were not advanced in agriculture and the arts was from the idleness engendered by the enervating influence of the climate. The fatigue and endurance necessary to overcome the actual state of things, was least of all expected; and such a thing as suffering from cold, even on elevated spots, had not been dreamed of.

The common food of the country was found to be ground manioc and jerked beef, which proved palatable after their fatigues. Their guide, however, who was a New Hampshire man, complained much of his privations.

They had seen the Mato Virgen, or primeval forest, and instead of finding it, as had been represented, beset with difficulties in penetrating it, they were surprised to find it more accessible than some of the

forests in our Atlantic States. According to the accounts of intelligent residents, it is easily traversed in any direction. The accounts of difficulties have probably arisen from the second growth on spots that have once been cleared, where the bamboos are intertwined so as to render the woods almost impassable, and this has no doubt been taken for the primeval forest.

The nature of the Brazilian forest will account for so little being known of its botany. The trees are in fact inaccessible, the trunks being from seventy to one hundred feet high, before the branches appear, so that the latter can only be got at by felling. The view of the forest is truly remarkable. Trees of immense growth intermingled with others of less size, presenting to the eye the most singular and fantastic forms imaginable. The roots of climbing plants, dangling between their straight trunks, resembled the tackling of a ship.

A little incident that occurred to these gentlemen will show the difficulties to be encountered in obtaining specimens. They had observed for a few days a beautiful yellow flowering tree, that was very conspicuous in the forest. Believing that it could be easily come at, they made the attempt to reach it, but without success, finding it, instead of being low, a high and inaccessible tree. They then directed their steps to others, but were disappointed again. Determined not to be foiled in their pursuit, they again went off in search of others in sight; these, to their surprise, were on the opposite side of a river. Nothing daunted, Mr. Brackenridge crossed it, though deep, and endeavoured to scale the tree. What had appeared near the ground, now proved a tree of some sixty feet in height, with a smooth and slippery bark; and he returned to his companion empty-handed. Dr. Pickering next made the attempt. After crossing the stream with difficulty, he reached the desired object, and endeavoured to climb, but after reaching some forty feet, was obliged to acknowledge himself vanquished. They continued their return, and when near Padre Luiz's house, they found a small tree of the same kind they had been searching for, which proved to be a species of Cæsalpinia.

At Padre Luiz's they again passed the night, and the next day endeavours were made to reach one of the pointed peaks of the Organ Mountains. In this Dr. Pickering succeeded, though it did not prove the highest. On their way they found many interesting plants; among them the Epiphytic Orchideæ, slender Cecropias, rising to the height of one hundred feet without a limb, arborescent fern trees forty feet in height, and numerous parasitical plants hanging from the various trees in great profusion; Bromelias, Bignonias, &c. On reaching the top, he found trees stunted and gnarled of about thirty feet in height.

A good idea will be given of the richness of the Brazilian Flora by the fact, that when mounted in the tree-top, he collected specimens of three flowering trees not before seen, and three species of mistletoes.

The same afternoon they reached Estrella, but found their guide had not procured any passage for them. They, however, succeeded after some difficulty in procuring one, set out before sunset, and reached Rio the next morning by three o'clock, having been greatly tormented by the musquitoes, and a minute fly, which was even more troublesome.

Finding that the repairs had not proceeded so rapidly as I anticipated, I readily gave permission for a second jaunt, which they undertook in the direction of Piedade. Piedade is on the eastern side of the bay, nearly opposite to Estrella. On landing, they proceeded to Trexal, at the foot of the mountain, sixteen miles from Piedade, where travellers may get good lodgings, &c., for Brazil. The next day they took the route by the pass to Mr. March's. The summit of this pass commands a magnificent and extensive prospect, and is called Buena Vista. They reached the Fazenda of Mr. March about midday. It is situated in a beautiful valley, immediately behind the main ridge, and between two mountains. The houses were overflowing with visiters, who had assembled to pass the holidays. This estate is large, embracing some thirty miles square, but only a very small proportion of it is cultivated. A large number of negroes were about the establishment, and every thing is kept in perfect order. It is a place of fashionable resort for the inhabitants of Rio, especially the English. The houses were comfortable after the Brazilian style. The garden and grounds are laid out on the English plan, and well stocked with very fine fruits, peaches, apples, pears, plums, gooseberries, all of which come to perfection. Of vegetables, they have potatoes, cabbage, turnips, carrots, beets, onions, parsnips, celery, and lettuce. Bananas will not ripen, the temperature being frequently as low as 40°. Mr. March said his houses were situated three thousand one hundred and fifty feet above the level of the sea, and the peaks in the vicinity are about one thousand feet higher. To the westward he pointed out a peak said to be eight thousand feet in altitude, and which is the highest of the range. So far as is known, no one has gained the summit, although Mr. Gardner, an English botanist, by following the tracks of the tapir, had reached within a few hundred yards of it, after two days' hard labour, and found that the vegetation resembled that of temperate climates. Time did not admit of our gentlemen making the attempt. All that could be done was to ascend the hill pointed out by Mr. March, in the vicinity of his house, as never having been ascended, and which is one thousand two hundred feet above it. This was accom-

plished, although with difficulty. On this trip they met with fallen timber, but the Brazilian woods, in general, were remarked as being much more free from it than our own. No change in the vegetation was observed. The route through this pass is much more difficult for travellers than that of Estrella, but to the admirer of nature more interesting. From the base to the summit of the mountains the virgin forest extends. The main chain here is much broken; the peaks appear more in the form of columns or pipes, and are quite inaccessible, casting a dark shade upon the deep and wooded valleys beneath. After being hospitably entertained they came back, crossing over to the island of Pagueta, where they had an opportunity of examining the large heaps of the shells fished up out of the bay, for the purpose of burning for lime, and were not a little surprised at the numbers of different genera which composed them.

The results of these two expeditions were the addition of a great number of very interesting plants to our collection. These will be treated of in the Botanical Report.

A few days before our departure, we made a trip to the top of the Corcovado. The naturalists, who were of our party, observed that almost a total change had taken place in the plants since their last visit, about a fortnight before. I took with me the necessary instruments to measure its height, and we all amused ourselves with collecting plants, insects, lizards, &c. We took the road that turns off near Gloria, and even before we began to emerge from the city, several novel kinds of ferns were observed growing on the house-tops and walls. We soon entered coffee plantations, groves of bananas, tamarinds, mangroves, and orange trees. A vast variety of plants were pointed out to me by Mr. Brackenridge, among them the beautiful Vochysia, with its splendid yellow blossoms, showing conspicuous among the rest. After a fatiguing walk we reached the top. The last quarter of a mile, or the last rise to its summit, causes one to become somewhat breathless in a hot day; but when the top is gained, it is worth all the labour of climbing, and amply repays for the exertion.

The whole of the magnificent harbour, the city and environs, lay beneath our feet. A bird's-eye view is had of every thing, grouped in the most pleasing variety; and nothing strikes one so forcibly as the white sandy beaches of Botofogo and Praya Grande, with the beautiful blue of the sea washing on them. The many lakes, the castellated peaks, and the variously shaped, craggy, and broken hills, are all softened by the light and airy green vegetation, creeping up their sides so as to melt them almost into one. The harbour was

covered with its busy and now tiny fleets, and many of its large islands looked as but specks on its flat surface. The day was beautifully clear, and the refreshing sea-breeze just what we could desire. The tower and observatory have been destroyed. To form an idea of the beauty of Rio and its environs, it is necessary to mount to the top of the Corcovado, or some high peak in its neighbourhood.

After finishing our observations, and fully satisfying ourselves with the beautiful scene, we descended to the Belle Rue, where we enjoyed a rest and lunch. We returned to the city by the way of the Aqueduct late in the afternoon, all greatly delighted with our day's jaunt, which, beside the amusement, had proved quite a profitable one in the way of collections.

SLAVES SLEEPING.

CHAPTER IV.

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CHARACTER OF THE BRAZILIANS—CONSTITUTION OF THE EMPIRE—RULING PARTY—ELECTIVE REGENCY—ADMINISTRATION OF JUSTICE—ELECTIVE FRANCHISE—ARMY—NAVY—SCHOOLS—SLAVERY—FEELING TOWARDS FOREIGNERS—POPULATION—NATIONAL DEBT, REVENUE, AND EXPENDITURES—COMMERCE—EVENTS IN THE SQUADRON—DEPARTURE FROM RIO.

CHAPTER IV.

POLITICAL STATE OF BRAZIL.

1838.

During my stay at Rio, I had an opportunity of seeing several intelligent gentlemen, who had long been residents of the country; I am indebted to them for much information relative to the political state of this empire. Brazil, though quiet at the time of our visit, will long be destined to outbreaks and alarms, either from local oppression or some slight political movements. The people for the most part take very little interest in politics, or in the general welfare of the state. As yet, their habits make them averse to mental exertions, and they generally prefer their own ease, which precludes them from engaging in political excitement. They are not yet sufficiently advanced in civilization and education, so far as regards the mass of the population, to rise from the mental degradation which the policy of the mother country entailed upon them.

The Brazilians, from the character I have received of them, are very ceremonious and punctilious, susceptible of flattery, suspicious yet courteous, selfish, cunning; assuming frankness and generosity, timid, unsteady in purpose, and without any large and comprehensive views. What is claimed from them as a right in a bold and confident manner, is readily yielded, while often through their ignorance they become presumptuous.

The people are farther advanced in morals and intelligence than their government, but as yet they are not sufficiently enlightened to know their power. They are slow to act, and appear very patient under oppression. Long endurance of despotism has made them so.

The new constitution was adopted in 1825. This secured the legislative power from further interruption, and achieved a complete victory over the bayonets and tyranny of Don Pedro, by forcing him, through the threats of the people and his fears, to grant a more liberal

constitution. Political freedom seems to have made rapid advancement through the freedom of the press, and the voice of liberty may be said to have been heard. At first it was listened to with apprehensions, and its meaning but imperfectly understood. Although many years have since passed, the people have scarcely more than begun to feel that they possess individual rights, and for the most part yield a blind obedience to the laws. This is true as respects the population of the seaports; but in the country, the population being sparse, communication of every kind is difficult, and social intercourse embarrassed by early habits and customs. The advantages of a free and frequent interchange of sentiments are in consequence almost entirely unknown. A long time will probably elapse before there will be any political struggle among them. They are prospering in their private concerns, and contented without any ambition to advance themselves in political knowledge, or to meddle with the concerns of the government, except in their local operation. The state of society in the interior is very much of this character, and consequently the affairs of the country have suffered little derangement from the difficulties which have occurred, and mal-administration under the different sovereigns who have held rule for the last thirty years. Through part of this time a rapid decline was experienced in the national prosperity, which led to the abdication of the late Emperor Pedro I.

The whole political machine by which the government is administered is uncouth and awkward, being composed of a mixture of feudal notions with the refinements of modern times. It is moved and sustained more by the habit of obeying the laws, than by skill and judgment in administering them. There is an entire absence of all force, moral as well as physical, to sustain the government; yet to this in a great measure is it to be ascribed, that the country has not become a prey to anarchy and confusion. Combined with the above causes, is the jealousy that exists among the parties who have been called to office, and which prevents self-aggrandizement. Pretensions have been at times asserted, dangerous to public tranquillity and threatening the subversion of the established order of things. These have been promoted by the disaffected and discontented, principally composed of or countenanced by those persons who, after the departure of Don Pedro I., remained in the country, and who, having lost their importance with their offices, returned to private life, with their pride wounded, their fortunes and reputation impaired and injured, and themselves dissatisfied with their condition. These persons have sought every occasion to disturb the even current of events, and to array themselves against the power of the state, wielded as they deem

it to be, by plebeian usurpation of the royal prerogative; but hitherto they have failed.

Causes of dissatisfaction are not wanting to produce discontent. They are indeed numerous, and among them are a total want of justice in the administration of the laws; the neglect of all petitions for political reform and the remedy of abuses; the onerous and injurious regulations imposed by the government; and the haughty conduct and absolute power of those who hold office. Notwithstanding all these discouragements, well-informed residents perceive an improvement within the last few years, on the part of the government and of the people also. The establishment of a public press has had its effect in producing this change, by enlightening the public mind, and will gradually acquire the same control here that it exercises elsewhere; and education is better attended to than it used to be, although as yet it is far in the background.

According to the best information, the present government was established by, and is under the guidance of, a few leading men, a small party in Rio, who manage all the political concerns of the empire. They seem to act without any desire of personal aggrandizement, and apparently without ambition to be distinguished beyond the circle of their party. From what has already been said of the interior and the character of its inhabitants, it will be seen that there is no great difficulty in managing the provinces by means of a few influential men, and thus the whole power seems concentrated within the city of Rio, where it is easy to direct things to the issue that they may desire.

It was this party which overthrew or effected the reform in the constitution under Don Pedro I. in 1823, and established the new Congress, consisting of a senatorial body of fifty, who were chosen for life, and of one hundred deputies, for three years. The reformed constitution provided that the succession should devolve on the eldest son of Pedro I., during whose minority there should be three regents chosen for life.

Things went on badly after the beginning of the new order of government, principally in consequence of the disastrous Banda Oriental war, which caused a great sacrifice of money and resources, deranged the currency, and involved the nation in debt. In 1831, Don Pedro abdicated the throne, and went to Europe; the regency came into power, and this band of leading men formed themselves into an opposition to the government. They succeeded in making some important changes, setting aside the three regents for life, substituting one elected for four years, and introducing a federal system, which

gives the provinces the right of local legislatures to regulate their provincial concerns, independently of the general government.

The manner in which the reforms in the constitution were effected, will give some insight into the mode of conducting business, and exhibits the power of this party. The plans, after being long under discussion in the Chamber of Deputies, were referred to a committee of that body, who reported upon them, and they were finally passed, under a decision by the Chambers that the Senate and Regency had no right to vote, control, or even deliberate upon the question. They thus assumed to themselves the whole power of legislative action on so momentous a subject, totally disregarding the constitutional claims of the other co-ordinate and co-equal branches of the government, whose concurrence was necessary to legalize all their acts under the constitution, and whose authority was then in vigour, and could not be suspended, although it was susceptible of modification in the proper form. This subject was recommended to the attention of the people in 1833, with a view to party action on it; and new elections were ordered, for the purpose of deliberating upon a new constitution. But from some circumstances, the regents were not willing to accede to the measure, after it had passed the forms of legislation in the Chamber of Deputies; they steadfastly adhered to the determination of withholding their sanction to the law, opposing all terms of compromise. For a long time the tranquillity, if not the destiny of the country, was in jeopardy. The regents were finally, as was supposed, and generally believed, brought over by pecuniary considerations. The Senate also ineffectually attempted to interpose a protest against the measure (the election of a regent to hold office for four years), not only to sustain their dignity but maintain their rights; neither was it satisfactory to the people generally, nor to the national guard, who it was well known would have supported the regents in their opposition. All impediments, however, to the passage of this favourite and important measure, were overcome by the power and management of this band of leading men, who contrived to unite with them the most opposite characters, and to neutralize personal animosity, as well as party strife, absorbing all other subjects, and enlisting them in support of this measure. They thus clearly manifested their influence, in being able to set aside constitutional restraints, overcoming the executive power, and controlling the senatorial aristocracy.

The new constitution seems to operate satisfactorily under these leaders. There are, however, some features in it which give its warmest friends many fears respecting the stability of the government. One of these is the difficulty of making the provincial legislatures

work harmoniously with the general government. Great stress is, however, laid upon the character of the Brazilians, who are disinclined to change, and upon their habits of obedience to the laws and constituted authority. This gives a well-grounded hope for the peaceful and onward march of the public prosperity under the new constitution.

Every exertion is making to give the young Emperor a good education, and his talents are well spoken of.

The regulation of the currency has continued to claim the attention of the government, as involving the most important questions, and those likely to bring about difficulties. Some apprehensions are entertained that the local governments may apply a remedy themselves. In the Chamber of Deputies, all money-bills originate, but the Senate may amend them. All laws must be sanctioned by the Emperor after having passed both branches of the legislature. In case of disagreement between the two houses, the members unite in the Senate chamber, and the question is decided by a majority of votes. There are no doubt many sources of discord, but they are not fully known by any, except the principal actors, and few are aware how the affairs of the kingdom are going on. At this time (1838 and '39) all those acquainted with the people and government considered the whole kingdom in a precarious state: the administration at Rio Janeiro was believed to be unpopular, while some of the provinces evinced a strong disposition to join with that of Rio Grande in revolution. But this cannot succeed. Rio, with its situation and commercial advantages, must and always will have the ascendency in one way or other, will control its resources, and must be the seat of government of this empire.

The administration of justice is confided to two high tribunals, which are open to the public, and where causes are decided on appeal by a majority of the judges.

These tribunals are, first, the Relaçào, of which there are two branches, one at Rio and the other at Bahia, each composed of eight judges. Second, the Supreme Tribunal of Justice, of twelve judges. The inferior courts are those for the trial of civil and criminal cases, an Orphans' Court, and a Court and Judge of Findings and Losings, the last of which is not yet abolished, however obsolete it may have become. Great corruption exists in them all, and no class of people are so unpopular as the judges. It is generally believed, and the belief is acted upon, that to obtain justice, all classes, including priests and laymen, lawyer and client, legislators and people, regents and ministers, must submit to great imposition; that it is next to impossible

to recover a debt by law except through bribery. If a debtor has money or patronage, and refuses to pay, it is difficult to obtain the payment even of an acknowledged note of hand through the process of the law, and it generally takes years to accomplish.

It is, however, greatly to the praise of the Brazilians, that it is not often necessary to have recourse to law for this purpose. The greatest injustice occurs in the Orphans' Court; but the Court of Findings and Losings is one of the most singular in this respect. It takes charge of all things lost and found, making it the duty of a person finding any thing to deposit it with the judge. The loser, to prove property, must have three witnesses to swear that they saw him lose it, and three others, that they saw the finder pick it up, otherwise it remains in deposit. To show the working of this system, a gentleman of Rio found a bank-note of four hundred milrees (about $250). The owner went to him and claimed it, proving satisfactorily to the finder that the identical bank-note was his, upon which the finder gave it up. The Judge of Findings and Losings heard of the circumstance, sent for him, and asked a statement of the case, which the finder unsuspectingly related. The judge praised his honourable conduct, and was punctiliously polite. The next day, however, he issued an order for the deposit of the money found; and because it was disregarded, the finder, a respectable foreign merchant, was arrested in the street and sent to prison, to be confined with common criminals. The jailer, however, having private apartments for those who could pay for them, he became his guest, and was preserved from the disgust of being a close prisoner, and the companion of degraded and depraved wretches. Before he could regain his liberty, he had to pay the amount found, the decision being the forfeiture of a like sum, together with the jailer's fees, &c.

The justices of the peace for each district are elected by the people, four at a time, to serve as many years by turns, substituting one for the other, when sickness or other circumstances prevent either from serving. They have final judgments in amounts not exceeding sixteen milrees. In cases of civil process, they act as mediators to effect a compromise and reconcile difficulties. Their political attributes are to preserve the peace in case of riot or disorder among the people, and they have a right to call on the national guard or military police to aid them, who must act under their direction. There is no civil police, and no imprisonment for debt. Trial by jury was at first limited to political offences and violations of the liberty of the press, but it is now extended to criminal cases, and in some instances to civil suits. Sixty persons compose the jury, and forty are necessary

to try causes. The juiz de decrito (judge of law) sits with them in court, acts as president, and applies the law to the cases the jury may decide. Jurymen serve for one year, and are chosen in the following manner. In each district the vigairo (vicar), a justice of the peace and a member of the municipality, select from a list of male parishioners, those qualified in their judgment for jurymen, and submit the names to the municipality, who, assisted by the vigairo and justice of the peace, purge the list of such as may be considered improper persons. It is then officially communicated by the municipality to the justice of the peace, and posted up for public inspection in the office, and on the doors of the parish churches throughout the district.

To entitle any one to vote at an election, he must have an income of two hundred milrees per annum from property, trade, labour or employment of any kind. The vigairo sits with the judges at elections to decide on the qualifications of voters. Friars or members of religious fraternities are not entitled to a vote. Free blacks have all the civil rights, and vote at elections the same as white men.

The attorney-general of the nation is the accuser in all criminal cases. Criminals have the right of counsel.

It may be said that there is no standing army in Brazil, for the few troops do not merit that name. A military staff on a large scale is supported, with a large corps of military police, and a national guard. The national guard is organized by law, and in it all males from eighteen to forty-five years of age are enrolled. They are equipped at their own cost, the nation furnishing arms and ammunition only. Detachments of this guard are on duty daily at the palace and public offices.

The navy is not effective; they want seamen, and are not likely to have any. A naval academy is established for the education of cadets or midshipmen. Here they enter at twelve years of age, receiving some of the first rudiments of education, and remain four years. After passing an examination, they are sent to sea, serve there four years, and if found qualified are then promoted to second lieutenants.

The military academy they enter later, remain seven years, passing through various courses of study, and if found competent, they are made lieutenants. From what I understood, the system of education is very imperfect.

Schools for educating the people have been established, and the female sex are now allowed to be educated.

Agriculture is extending; and the slave trade, since the treaty with England, has been prohibited; but large numbers of slaves are still easily smuggled, by the connivance of the authorities, and although

many are captured by British cruisers, yet it is said that more than one half of the vessels escape, and smuggle the slaves into the small rivers and harbours, bribing the collectors, who permit them to be landed. After landing, the slaves are driven into the woods, where they are secreted until they are sold to the planters in the interior.

The slaves do not increase, as procreation is prevented as much as possible. The two sexes are generally locked up at night in separate apartments. The number of slaves imported into Rio and Bahia previous to the prohibition of the slave trade in 1830, was about forty thousand a year for the former, and ten thousand for the latter, as follows:

		RIO.		BAHIA.
1828	. .	41,913	. . .	8,860
1829	. .	40,015	. . .	12,808
1830	half year	29,777	. . .	8,588

About one-third of these were lost by death, leaving two-thirds as an accession to the labour of the country.

The number annually imported since 1830, contrary to law, is estimated at seven to ten thousand.

In speaking of the apprehension of a rise of the blacks in the provinces, the well-informed seemed to entertain no kind of fear of such an event. I was told that Bahia was the only point at which insurrections were ever likely to occur, and this was from the prevalence of the Mina slaves, who are very intelligent, and capable of forming organized bodies, which they occasionally have done. The slaves of the other provinces are of a mixed character, incapable of any organization, and from having been taken from different tribes on the coast, they are more or less hostile to each other, and would be opposed to any such union.

The Brazilians have great respect for foreigners who are not Portuguese. The latter are detested. They have a strong bias in favour of the United States and the American government generally. They think the time is approaching which will unite the people of this continent in a distinct national policy, in contra-distinction to that of Europe, and in rivalry to it. They are vain of their own country and its institutions, and firmly believe that a high destiny awaits Brazil. The government, in its political relations with other countries, is seemingly confiding and liberal.

The population of the empire, taking the last returns of the members of the Chamber of Deputies as a guide, is estimated at five millions. No census has yet been taken, but it is thought to exceed this number. The scrutiny formerly exercised by the government into their domestic

affairs, it is said, caused them to conceal the actual number of persons in their families. Of the above number, about two millions are slaves. No estimate has been made of the proportion which free blacks, mulattoes, or Indians bear to the whites or to each other. The relative number of slaves varies much in the different provinces; it is largest in Rio de Janeiro and the Minas Geraes. The population of Rio in 1810 was estimated at forty thousand, in 1838 it was two hundred and fifty thousand. In Appendix XXI. will be found a statement of the population that may be considered semi-official.

The national debt of Brazil amounts to one hundred million milrees, or sixty million dollars. The revenue was about sixteen millions of dollars for 1838. It is derived principally from exports and imports. A statement of the quantities of produce exported in the above year, will be found in Appendix XXII. I was not able to obtain those of the imports. The expenditures of the government are fixed by law at about the same sum. All appropriations are specific.

The imports amounted to over twenty millions of dollars. The amount of exports is variously stated. Coffee is the great staple, and more than one hundred and twenty millions of pounds were exported in 1838. It is derived from the central provinces, and the exports of it have more than doubled within the last ten years. The exports of the southern provinces are mostly confined to hides and tallow; those of the northern, to sugar, cotton, and tobacco.

The trade with the United States has greatly increased. Within the last few years, from one hundred and sixty to one hundred and seventy American vessels take and bring cargoes to and from the United States, and some foreign vessels are engaged in the same trade. The consumption of American flour in Rio and the neighbouring country, has been during the same year, about one hundred and twenty thousand barrels.

The state of this country and the southern republics, renders it highly necessary that a suitable naval force should be employed on this coast for the protection of our increasing trade.

The currency of the country is in paper and copper. Gold and silver coins are articles of traffic, and fluctuate in value: few or none of these are in circulation. The bank issues notes of milrees, which also fluctuate. The usual value of a milree is from sixty to seventy cents. One thousand five hundred ries are equal to a dollar.

Printed books of all kinds are allowed to be brought into the country. Those of foreign origin are not under censorship.

The great drawback to the facility of business is the number of holidays on which the custom-house is closed, and all business

suspended. These amount to about one hundred days in the year. These holidays are a great alleviation to the labour of the slave.

Foreign merchants reside in the country, in the neighbourhood of the city.

During our stay in Rio, George Smith, a seaman, while employed on board of one of the lighters in charge of Midshipman May, fell overboard and was accidentally struck with an oar; Midshipman May, in a praiseworthy manner, jumped overboard to his relief, but did not succeed in saving him, for he sank immediately and was drowned.

The delays in Rio had no effect upon the general health of the squadron, although I was fearful such might be the case, not only from the heat of the climate, but the copious draughts of aguardiente with which the foreigners supply the sailors.

I found it necessary here to increase the crews of the ships, and applied to Commodore Nicolson, commander on the Brazil station, for that purpose. Thirty men were supplied the squadron. They were the most indifferent and worthless set, with two or three exceptions, we ever had on board. They were almost the only persons attached to the vessels on whom it became necessary to inflict punishment.

The markets are abundantly supplied with fish, beef, and poultry. Vegetables are to be had in abundance, and are all sold in the streets.

On the 26th, the Peacock and tenders returned, and brought their work up to the observatory at Enxados Island. Captain Hudson had not been able to examine the St. Thomas Shoal. Having lost five days in consequence of bad weather, it became impossible to accomplish it within the given time.* During his progress, he had lost an anchor, which, when hove up, was found to have been broken off at the shank. Application was immediately made to the government for one, which request was very obligingly and promptly replied to, by desiring us to select one of a suitable size from those in the dock-yard.

By the last of December we had completed all our scientific duties. These consisted of a series of pendulum observations; those for longitude by moon culminating stars; circummeridian observations for latitude; magnetic dip, intensity, diurnal variation; and others, including tides, and solar and terrestrial radiation. We now made every preparation for sea.

* The measurement of the whole distance by sound, when reduced, gave 1° 08′ 52″ 8‴ for the difference of meridians. Each distance between the vessels was the mean of about thirty observations. The longitude of Cape Frio Light, deduced from that of Enxados, which had been ascertained by moon culminating stars to be in 43° 09′ 06″ 67‴ west of Greenwich, is, therefore, 42° 00′ 13″ 87‴ W. For the particulars and a diagram of this work, see Appendix XXIII.

On the 5th of January the Porpoise was ordered to drop down near a slaver, on board of which it was reported some of our men had been smuggled, to form a part of her crew. She was boarded, and though the captain denied that they were on board, after a search two were found. One of them was a black, who had himself been a slave, yet he had been induced to enter for the purpose of carrying on this nefarious traffic. This was the brig Fox, and though undoubtedly fitted for a slaver, she sailed under English colours. It was given out that she was bound for New Zealand.

On the 6th of January, every thing being ready, we weighed anchor, and dropped down the harbour. On passing the Independence, we were saluted with six cheers, which were returned with enthusiasm.

There is no difficulty in beating out of the harbour of Rio, with a ship of any class, although vessels sail generally in the morning, with the land-breeze. The breeze failing, we anchored without the harbour, and I took this opportunity of sending back the Flying-Fish, in order to recover some of our men who had absented themselves. Lieutenant-Commandant Ringgold took charge of her, and effected the object without difficulty. During this time I employed the officers in measuring the height of the Sugar Loaf again for exercise.

In the evening we weighed anchor, and stood to the southward on our course.

PALACE.

CHAPTER V.

CONTENTS.

PASSAGE TO RIO NEGRO — ARRIVAL THERE—GUACHOS—EXCURSION OF THE NATURALISTS—SALT AND SALT LAKES—GOVERNMENT AND POPULATION—PRODUCTIONS—TARIFF—INDIANS—WANT OF ENTERPRISE—DESCRIPTION OF THE COUNTRY—RIVER AND TIDES — CLIMATE — VEGETATION — TRADE — HARBOUR — SQUADRON DRIVEN TO SEA—DANGERS IN SURVEYING — CONVICT SETTLEMENT — COMMUNICATION WITH BUENOS AYRES — DEPARTURE FROM RIO NEGRO — STATEN LAND — STRAITS OF LE MAIRE—APPEARANCE OF TERRA DEL FUEGO—ITS HARBOUR—PARHELION—MIRAGE—MEETING WITH THE RELIEF—HER DEPARTURE FROM RIO—CURRENT—RIO PLATA—CAPE RAZA—CAPE ST. JOSEPH—CAPE THREE POINTS—DREDGING—BELLACO ROCKS—CAPE ST. DIEGO — GOOD SUCCESS BAY — CAPTAIN KING'S SAILING DIRECTIONS — NATIVES — INTERCOURSE WITH THEM — BOTANY — GEOGRAPHICAL POSITION — NEW ISLAND—ITS POSITION—ARRIVAL AT ORANGE HARBOUR—EMPLOYMENTS.

CHAPTER V.

RIO NEGRO.

1839.

The winds proved light and variable during our passage to Rio Negro, and we occasionally experienced a southwesterly current, of little strength. On the 18th January, when seventy-eight miles distant from the mouth of the Rio la Plata, we passed through the discoloured water of that river. Its temperature was 4° less than that of the surrounding sea. After getting to the southward of the river, the direction of the current changed, and it was found to be setting to the northward.

Towards evening, on the 19th, we met many discoloured patches in the water, and found they proceeded from a species of Salpæ, which we had not before seen. When the night closed in, the sea became very luminous, the vessels in passing through the water leaving long bright trains behind them. Vivid lightning in the west showed a dark bank of clouds, betokening a storm. About 10 o'clock P. M., a haze suddenly enveloped us; the temperature of both air and water fell from 67° to 57°, ten degrees, giving a cold clammy feeling to the air. The water became quite smooth, and the breeze died away; all on deck seemed awakened to a sense of danger. We immediately shortened sail and sounded, but found no bottom with one hundred and fifty fathoms of line. The vessels of the squadron came up in close order, sailing as it were in a sea of silver, from the light of which their forms became visible. The effect was beautiful, and increased the mysterious and alarming sensation. Shortly after, we had a change of wind to the southwest, followed by a dense fog, which lasted for a day; but the temperature of both air and water remained six to eight degrees colder, until the 23d, when it again rose to the height it had been before.

I have little doubt but this remarkable change and fall of temperature, were caused by the near approach to icebergs, some of which have been at times seen nearly in this latitude, 38° 55′ S., longitude 54° 30′ W. After this we had fine pleasant weather, until our arrival off the Rio Negro, the temperature of the air and water having fallen ten degrees during our progress from Rio.

On the 22d we experienced a heavy dew. Our observations confirmed the remarks of Captain King, that it is accompanied by a northerly wind, or change to that quarter.

We next passed over the position assigned the Ariel Rocks on the charts, and sailed two degrees on their parallel, but saw no indication of them.

In approaching the coast, the soundings were remarkably regular, decreasing about a fathom in three miles. After passing to the south of the river La Plata, they were composed of fine gray sand, with pebbles and shells, while to the north they were of blue mud. Soundings were had in fifty fathoms water, one hundred and fifty miles off the coast.

On the 25th we discovered the coast, which is a line of low sand-hills, without trees, and it exhibits little appearance of vegetation. In the evening we anchored off the bar, in eight fathoms water, just after which we experienced one of the remarkable squalls of this coast, that rose from the southward and westward: it was attended with much lightning and thunder; quantities of sand and insects were blown off from the land; but little rain fell. The barometer indicated this squall by a depression of two-tenths of an inch. The wind soon changed and brought fine weather, the thermometer falling six degrees during the change.

Having been led to believe we should be boarded by pilots on our anchoring off the bar, I was a good deal surprised to find none, and no endeavour making to board us, although the sea was quite smooth. The only appearances of inhabitants which we could see with our telescopes, were a few horsemen suspiciously reconnoitring us from the flagstaff on the top of the hill. I then concluded to despatch the Sea-Gull under Lieutenant-Commandant Ringgold into the river, for the purpose of having communication with the town, directing him to take the channel leading to the northward and westward, as shown by the only chart we had, whilst I followed in the Flying-Fish, with the scientific gentlemen; it proved to be the wrong one, and on the tide falling the schooners both grounded. Our situation was not the most agreeable; for, in the event of the sea rising, we should have been exposed to all the fury of the surf, without any escape from the

numerous sand-bars. It became necessary, as the tide rose, to make the river. The Sea-Gull having got off, I put the scientific gentlemen on board of her, and ordered Lieutenant-Commandant Ringgold to proceed in, keeping in what the chart pointed out as the channel-way and deepest water. He finally succeeded in getting into the river, after thumping heavily over a sand-bar, with some fears on the part of the passengers, but without injury to the vessel, and anchored, after dark, about half a mile up the river.

During this time an amusing occurrence took place in the road-stead. I had directed Lieutenant-Commandant Ringgold, in case of accident or requiring aid, to make signal, that I might order boats at once to his assistance. When the night closed in, the signal was seen; when the requisite signal was made from the Flying-Fish to the different vessels to send boats to assist. The commanding officer's mind being somewhat impressed with an idea of the hostility of those on shore, he concluded the boats were required to repel an attack, and had them fully armed; in this state they were met in a short time exerting themselves to their fullest strength at the oars, to be in time to take part in the expected fray, and appeared greatly disappointed when it proved a false alarm, and that none was to take place.

Shortly after the schooner anchored, a voice was heard from the shore, ordering a boat to be sent immediately, when a party landed, but no one was found to receive them. Seeing a light at a distance, they proceeded towards it: it proved to be the pilot's house, a long low barn-like building; but no inhabitants were visible, and none made their appearance until our party had taken a survey of the premises. The furniture was of a rude and scanty description; a table, bench, two or three bunks in one corner, and in another a number of arms, consisting of cutlasses, carbines, and pikes, in good order; in the others, various accoutrements. The two pilots, one an Englishman and the other a Frenchman, with a negro, then made their appearance, and unravelled the mystery, by informing them that the vessels had been mistaken for the French squadron, and much alarm had been created by our visit; they also said that the guard of about thirty Guachos were in ambush near where they landed, with the intention of cutting our party off; but hearing them speaking English, they found to their satisfaction that they were not French. They also stated that all the inhabitants living near the mouth of the river had fled to the town, and that most of the women and children in the town were hurrying off to the interior. They were likewise employed driving off the cattle, and preparing to fire the country, the usual mode of warfare, and were rejoiced to identify us as Americans.

All this accounted for the reconnoitring that we had observed, and our not being able to obtain a pilot. What still more alarmed them was the different vessels firing whilst surveying, and our making the attempt to force the passage in the small vessels.

The captain of the coast guard now afforded all facilities, and a pilot for the schooner was sent on board to take her up the river, and horses and guides were furnished for a party to visit the town.

The next morning a detachment of lancers arrived from the governor, with orders not to allow our vessels to proceed up, and that the pilot should come on shore, which effectually put a stop to our plans; when Lieutenant-Commandant Ringgold determined to go by land.

It caused much alarm to the pilot, who entreated the officers to intercede with the governor in his behalf, and for that of the captain of the coast guard, stating that their lives would be forfeited for having attempted to pilot a vessel without the governor's orders. After some delay, a party proceeded to Carmen, under the escort of Guachos, to wait on the governor or commandant. On their way they met with a cordial welcome from all they passed, as the minds of all were now entirely relieved from fear, and great delight was expressed at seeing the North Americans.

These Guachos are generally well made, tall and muscular, with swarthy complexions, black eyes, and long hair, very large mustachios and remarkably small feet. Their costume is a red striped shirt, and white drawers, large, loose, and fringed at the bottom of the leg, called *calzoncillas*. Their trousers (*chilipa*) consist of two yards of scarlet cloth, which is sometimes ornamented at the corners; to form this into any thing like a garment appeared strange enough; yet, when it is on the wearer, it has the appearance of a pair of Turkish trousers. The mode in which it is put on is to confine the ends round the waist by a girdle (*triando*), the middle of the cloth passing down between the legs, while the ends fall over the girdle. On the head was worn a red conical cap surmounted by a tassel.

Their riding boots or leggings are made of the hide from the leg of a horse. This is stripped off and put on the leg while yet green, where it is suffered to dry, and remain until worn out. They fit very closely to the foot, like a stocking. The two largest toes of each foot were uncovered, for the convenience of putting them into the stirrup, which is only large enough to admit them. A long knife in the girdle completes the dress.

During the time of our stay, the naturalists ranged the country in the vicinity, and the officers were engaged in making a survey of the roadstead and bar.

The road to El Carmen is on the north bank of the river, over a range of downs, the south side being low. The river continues, about one-third of a mile wide, flowing in a broad, still current. There are no trees to be seen in the landscape.

On their way, the party stopped at several estancias. These are houses built of adobes or unburnt brick, divided into two or three apartments, without floor, ceiling, or furniture, and with a few out-

GOVERNOR'S ESTANCIA.

houses for the horses and slaves, and a coural for the cattle, formed of high poles, placed so near as to prevent the cattle from breaking through; the poles are from four to six inches in diameter, and from twenty to thirty feet high. They were met on the way by the minister of finance or collector, whose interrogations were satisfactorily answered; they were then allowed again to proceed.

The next person whom they encountered was an American, Dr. Ducatel, who was especially despatched by the governor; he announced himself as a physician and a citizen of the United States. His appearance was unlike both. He was dressed in the chilipa and calzoncillas,—in the full costume, and had the appearance, of the Guachos. His skill was much vaunted by his attendants. We afterwards understood that the doctor, having picked up a smattering of physic, and wishing to acquire a fortune, had gone to Buenos Ayres to seek one. There he accidentally heard of the want of Rio Negro in that respect; he embarked for that place with an ample store of drugs, and established himself as apothecary, surgeon, and physician. He is reported as having done well for some time, notwithstanding the healthiness of the climate and place, until the troubles at Buenos Ayres with the French, when the communication with the city being cut off, had prevented him from obtaining his usual supplies, and the troops from receiving their pay. With the former he had lost the means of

curing his patients, and with the latter the remuneration that was due him. He had therefore, to use his own term, "retired from business," and lived several miles from the town, husbanding his estate, which consisted of an estancia, as above described, and his demands upon the government and soldiers.

Under his escort they arrived at the pueblo, consisting of a few rows of mud and brick huts, scattered without any regularity over a sandy declivity by the side of the river.

On the opposite slope was the fort, an enclosure of some extent, in which were seen the house of the governor and the barracks. A presentation to the Governor-General, Juan Jose Hernandez, now took place. He, on being informed of our character, and the object of our visit, received our officers in a most courteous and friendly manner. He is a native of Buenos Ayres, of dignified manners, polite and courteous, and invested with great authority. The officers were invited to dine with him, and received his hospitality.

The doctor now undertook to show them the "lions" of the place, and carried them to the part of the town nearest the river, in which were the only two houses built of red brick. There they were introduced to an old Portuguese, who kept the only mercantile establishment in the place. It was a small store, said to have a very promiscuous assortment of goods, though the stock had become somewhat reduced; as an evidence of which, a few of the inhabitants applied to be furnished with pairs of pantaloons from on board ship, for their own were worn out, and the only articles of dry-goods at present in the store, were three or four yards of calico.

An American by the name of Adams, who was absent at the time of our visit, has engrossed all the trade and business of this place, and no other vessels but those in which he is interested had traded with it for the last two years, with the exception of two whale-ships, in 1837 and 1838; on them a duty of twelve and a half cents per ton was levied, although their sole object was to obtain fresh provisions. This, together with the difficult and changing bar, will always prevent their resorting to this port.

The inducements for a merchant vessel to visit this port are few; for it would be difficult to dispose of even the most necessary articles, in consequence of the poverty of the place; and there is no possibility of obtaining any thing in return, except salt. Of this there are several cargoes in stack along the banks of the river, which it is said could be delivered on board for twenty cents per bushel. It is obtained from the salt lakes, or salinas, on the Campos, and is transported to

the river in ox-carts. I regretted extremely that I had not time to spare to send a party to explore them, in order to have ascertained the extent of the staple commodity of this port.

These salt lakes are known to be numerous throughout the Pampas, and within a few leagues of the town of El Carmen there are four, from two to three leagues in circumference, from which salt has been taken, besides many others of smaller dimensions. From the largest of these, the salt that is exported from the Rio Negro is mostly obtained. In dry weather it is said to form very rapidly, so much so that it may at times be gathered daily, and that it attains the thickness of two inches in twenty-four hours. How far this is true, I will not pretend to vouch. Still more wonderful stories are told of the larger lakes in the interior; of their being ten leagues in circumference; and they are described as being covered with a crust of dazzling whiteness, so strong that a horse and rider may pass over it without leaving an impression. In heavy rains these lakes are converted into morasses of black mud, which, as the water evaporates, becomes encrusted with salt. The salt is beautifully white and finely crystallized, and requires no purification before carrying it to market. The specimens were thought to equal in purity those from our own springs. The general belief relative to these salt lakes is, that the salt is disseminated through the soil, no salt in a solid state having yet been found in any part of the country. No satisfactory information could be obtained relative to their having become weaker, as the only person who was able to give this information was Mr. Adams, who, as I mentioned before, was absent.

It appears that the policy of the present government of Buenos Ayres has been to discourage the raising of cattle and the exportation of hides from this place, in order, it is said, to concentrate the trade at Buenos Ayres. The large herds that were formerly kept in this country are now reduced to comparatively few.

None of the government officers have received any salaries for the last eighteen months.

There are about two thousand inhabitants within a circuit of eighty miles, exclusive of a few roving Indians. The population of Carmen is about five hundred. There are five Americans residing here, who state that they enjoy all the protection that the government can give, and that they are well treated.

The Rio Negro is navigable for boats to the village of Chichula, two hundred miles from its mouth.

The distance across the country to Buenos Ayres is but five hundred miles, yet it requires fifteen days to communicate with it; the

governor had received no advices or information for the last two months from that place. The route is very uncertain, owing to the hordes of hostile Indians.

Grain, fruit, and vegetables thrive well, and with proper industry might be produced in abundance.

The climate is delightful, and cold weather is seldom felt, although ice has occasionally been seen a quarter of an inch in thickness.

Bullocks and horses are the principal articles of trade; indeed they constitute the legal tender of the country. The former are worth from five to ten dollars, according to age; wild horses, two or three dollars, and if broken to the saddle, ten or fifteen.

The tariff of duties is the same as at Buenos Ayres, but the late reduction of thirty-three per cent. during the blockade did not extend to this place.

The Indians that are accustomed to visit this place (Carmen) for the purpose of war or trade are of four different tribes, viz., Pampas, Ancases, Tehuiliches or Teheulehes, and Chilenos. The two former occupy the territory to the north of the Rio Negro as far as the Rio Colorado. The Tehuiliches are from the mountains to the south, and the Chilenos from the southwest.

During the infancy of the settlement, and until of late years, these Indians were extremely troublesome, making descents upon the place, and ravaging the outposts, waylaying all who were not on their guard, killing them, and retreating rapidly on their wild steeds, with their booty, to the pampas and mountains. The Spaniards frequently retaliated, and by the superiority of their arms and discipline, inflicted summary punishment on them. The last attack of the Indians was made in 1832, when they met with such an overwhelming defeat, that they have not ventured to make another; yet the garrison is always kept in anxiety for fear of attacks.

The weapons usual in their warfare are a long lance and the ballos, such as is used in taking the ostrich and throwing cattle, which they use with great dexterity. This consists of a thong of hide, four feet in length, with a leaden ball at each end, which the horseman grasps in the middle, and gives the balls a rotary motion by whirling them above his head, then dashing on to the attack, he throws it when within range with unerring aim, and seldom fails to disable his enemy. The Indians who are most feared are the Chilenos. The Tehuiliches, notwithstanding their immense size, are considered little better than cowards.

All the information gained here tended to confirm the general impression that the Tehuiliches or Patagonians are above the ordinary

height of men, generally above six feet; and the minister asserted that he had often seen them above seven English feet. We had not any personal opportunity to verify this statement, the Indians being only in the habit of visiting this post once a year, to obtain supplies, viz., in the month of March, at which time a vessel usually visits the place.

The few Indians who inhabit the huts or toldos on the opposite side of the river, are converted, and are termed Indios Mansos; they are a mixture of all the tribes, and so much changed in habits and dress from their former condition and mode of life, that an accurate idea could not be formed of their natural character. They were none of them above the middle height; their limbs were usually full and well formed; their complexion a brownish copper, with coarse straight black hair, growing very low on the forehead: this is suffered to grow long, and hangs down on both sides of the face, adding much to the wildness of their appearance. Their foreheads are low and narrow towards the top, their eyes small, black, and deep set. Some were observed with their eyes set Chinese-like. The resemblance was somewhat increased by the width of the face, which was a particular characteristic. The nose is usually a little flattened at the root, and wide at the nostrils, the lips full, and the chin not prominent. The expressions of their countenance betoken neither intellect nor vivacity. The men were generally decked out in tawdry finery, partly after the Spanish fashion; the women had only the chilipa to cover their nakedness.

Of the Ancases very little appears to be known; they live towards the north, speak a peculiar language, and are inferior to the rest in stature.

The Chilenos are derived from the western side of the continent, and are predatory bands of the great Araucanian nation.

The Peulches, including the Pampas and Tehuiliches, Falkner, in his account of this country, describes as inhabiting the portion south of the Rio de la Plata, and to the east of the Cordilleras; they are scattered over the vast plains of the interior. Those to the north of the Rio Colorado are generally known under the name of the Pampas Indians; they call themselves Chechehets. Those to the south of that river are termed Tehuiliches; they inhabit the table-land between the Cordilleras, and the desert plains of the coast.

These people are represented as of gigantic stature, and it is said by the residents, that those from the south are generally taller than those from any other part, and Indians are said to have been met with who are distinguished for their gigantic height and well-formed limbs; but this rests on vague authority.

Our philologist related an anecdote of a young Indian, who had learned the Spanish tongue, whom he had been questioning relative to his language, in order to obtain a certain class of phrases. After having written down a word, in repeating it, he connected it with some adjunct, as *my* father, *his* house, *this* knife. The Indian mistook his meaning, and immediately took fire at the supposed insult, thinking that the correctness of what he had said was doubted, and that the object was to entrap him in a falsehood. It was with some difficulty that he was pacified.

The Guachos and Indians are of course good horsemen, being trained to it from their infancy. Indeed they may be said to live on horseback, and it is very seldom that they are seen to walk any distance, however short.

Their dress, although uncouth and ill-arranged, is comfortable, and picturesque when they are on horseback, particularly when at full speed in search of a bullock to lasso. The ease and nonchalance with which a Guacho mounts his steed, arranges himself in the saddle, quietly trotting off, lasso in hand, to select his victim, and detach it from the herd; then the eager chase, the furious speed of the horse, the flying dress of the Guacho, with upraised arm whirling his lasso, the terror of the animal, the throw of the lasso, and instantaneous overthrow of the bullock, all the work of an instant, excited both our admiration and astonishment. Nothing can exceed the animation of both horse and rider on these occasions.

GUACHO.

Mr. Waldron, our purser, made an endeavour to purchase some vegetables for the crews, from an estancia on the river-side, of which an old Spaniard was the owner, thus affording him an opportunity of

disposing of many of them; but the conditions were, that the articles must be on the beach in a few hours, which was ample time to have dug up an acre. As soon, however, as he learned these terms, he shrugged his shoulders, and declared the thing impossible, took down his guitar, seated himself in front of his house, and began to play a lively air, which his two sons accompanied with their voices.

The coast and the banks of the Rio Negro are composed of sand-hills, of from thirty to fifty feet in height, covered with a scattered growth of grass, which prevents the sand from blowing away. These gradually rise to the height of one hundred feet, except to the southward of the river, where the bank is perpendicular; at this height the ground stretches away in a level prairie, without a single tree to break the monotony of the scene, and affords a view as uninterrupted as the ocean.

The apparent hills along the river are found to be no more than the face of the excavation made or worn down by the river, forming the valley through which it flows.

The only verdure on the prairie is a small shrub, which when the lower branches are trimmed off serves a useful purpose. From an optical illusion, (the effect of refraction,) they appear, when thus trimmed, as large as an ordinary sized apple-tree, and one is not a little surprised to find them, on a near approach, no higher than the surrounding shrubs, four or five feet. Shrubs are trimmed in this manner at distances of about half a mile from each other, and are used as guide-posts on the prairie. A similar optical effect is spoken of by travellers on the steppes of Russia.

Game is most plentiful, consisting of deer, guanacoes, and cavias, cassowaries, partridges, bustards, ducks, &c. Armadillos were common, and the ostrich was frequently seen; porcupines are said also to be found. The cavias were seen running about in single file, with a sort of halting gait.

The soil of the Campos was mostly a mixture of clay, sand, and small pebbles, but is destitute of vegetable mould. They have the practice of burning the prairies in order to produce a new crop of sweet and nutritious grass for the cattle. The rock of the cliff, and along the river where it can be seen, is a soft, gray sandstone, in some places so friable as to be easily crumbled between the fingers, while other specimens are of sufficient hardness for building-stone. The stratification is perfectly horizontal.

The width of the river is less than a third of a mile; it has a rapid current, and a large body of water is carried by it to the ocean. The ordinary tide is about eight feet rise, and the spring tides fourteen feet.

The current is mostly downward, although the tide is felt about ten miles above its mouth. The ebb sets off shore some three or four miles, and may be known by the discoloration of the water, which just without the bar is comparatively fresh. The depth at high water on the bar is two and a half fathoms, and the bar is a changing one.

No springs were observed in the vicinity, or any trace of running water, except in the river. The water from the rains collects in the depressions, and forms large ponds, covering acres of ground, but only a few inches in depth.

The time of our visit corresponded in season to our midsummer months, and the mean temperature was found to be 73°. The winters are represented as very mild; snow does fall, but it disappears in a few hours. Ice is seldom seen, though frosts appear to be frequent in the winter. January, February, March, and April, are the least tempestuous months.

The vegetation of the upland bears the marks of long-continued droughts, in an absence of trees, and the roots of plants penetrating vertically. The stunted appearance of the shrubs, branching from their base, their branches dense, rigid, and impenetrable, usually growing into spines; the smallness of the leaves, and their texture which is dry, coriaceous, and hardly deciduous; together with the general brown aspect of the landscape, all denote a vegetation adapted to endure or escape drought.

There was formerly some trade here with Boston and New York, in hides, horns, bones, and tallow, in exchange for cotton and woollen goods of a warm fabric, hardware, crockery, boots and shoes, a few articles of furniture, spirits, and tobacco, all of which are bartered at an enormous profit. Considerable quantities of salt are shipped round to Buenos Ayres. Vessels discharging or taking in a cargo here, pay twelve and a half cents per ton. Vessels stopping without discharging pay half duty; vessels for refreshments are permitted to remain twenty-five days free of duty, after that time they pay half duty. This duty includes pilotage and all other charges; but the governor seems to have the power to exact the full duty whenever he thinks proper.

Sarsaparilla abounds in this section of the country.

As the bar is a shifting one, no permanent directions can be given, nor can any survey be relied on. The annual freshets and gales of wind that take place from May to October, often change the position of the bar. According to the pilots, it had recently undergone a change, and the depth of water was three feet less on it than had been before. Even the direction had been altered from southeast-by-south, to southeast, by compass.

The week we lay off the bar, we experienced much fog, and found the current strong, two and a half knots on the flood and ebb. The former runs to the southwest, the latter in the contrary direction. The roadstead may be considered a very unsafe anchorage, except in the fine season. The gales come from the southeast, with a heavy sea. By taking advantage of the flood tide, and standing off to the southward and eastward, there will be found little difficulty in getting off shore, to avoid the danger a vessel would be exposed to.

While engaged at this place, I felt great uneasiness for the safety of the boats, the officers employed having but little experience in managing them. The fogs and strong current rendered it extremely difficult to proceed rapidly with our survey: many of the boats were detained out over night, and others reached the ship with difficulty.

On the night of the 30th of January, the weather assumed a threatening appearance. The wind changed to the eastward, with a falling barometer; the sea rising, accompanied by a heavy fog, with the absence of three boats, caused me much anxiety. During the night the wind increased to a gale from the southeast. At daylight the Peacock made signal that the boats had reached her in safety. It had now became necessary for the squadron to leave this dangerous anchorage. Taking advantage of the tide, we effected it without difficulty, getting off under our storm-sails; three of the vessels were obliged to slip their cables. The barometer during the gale fell to 29·600 in., which was lower than we had seen it since our departure from the United States. Towards evening, when the weather moderated, we again sought our anchorage. One of the boats returned to the Vincennes with but half her crew; the rest, it was reported to me, had deserted. Two boats with officers were accordingly despatched for the purpose of apprehending them, as soon as we anchored. The men were found by the Guachos without difficulty. They accounted for their absence, that they had, while waiting on the beach, been enticed into the interior in chase of some game; and the fog coming on suddenly, they had lost their way, missed the boat, and were obliged to pass the night on the prairie. The boats in returning to the ships narrowly escaped accident in passing through the rollers on the bar, and it was with great difficulty they reached the ship at midnight. Their lengthened absence caused no little anxiety for their safety to all on board.

Dr. Pickering on this occasion at my request visited a cave he had mentioned to me as existing, for the purpose of ascertaining its temperature, believing it would give some more accurate information as to

the mean temperature of the climate at this season. It was found to be 70°, in a horizontal hole, twelve feet from the surface.

On the 1st February, the Peacock, Porpoise, and tenders, were engaged looking for their anchors; the latter regained theirs, but the former was lost, the buoy having sunk.

El Carmen may be termed a convict settlement; for culprits and exiles are sent here from Buenos Ayres. The garrison is composed of about two hundred soldiers, principally African and Brazilian slaves brought here during the Banda Oriental war. Among them we found a person who called himself an American, from Rhode Island, by name Benjamin Harden, junior, who was desirous of claiming our protection. He was of small stature, slender make, and a light complexion, with a mild expression of countenance, and about thirty years of age. His story was, that he had been by chance in Buenos Ayres at the time when the government was in want of troops, and that he was seized and compelled to enlist. On inquiring, however, of the governor, it proved that he had been engaged in a riot at Buenos Ayres, in which he had killed two or three men, and committed other outrages, for which he had been condemned to death, but on the intercession of a friend, the sentence was commuted to that of exile as a soldier at this place. His farther history is, that not long since he formed the plan of deserting with another convict, by seizing an English trading vessel, in the absence of the captain and part of the crew, and making off with her, which he was fully able to accomplish, being an excellent sailor. The night however before the day fixed on for the execution of this plan, he got intoxicated, discovered the whole design, and received the severe punishment of twelve hundred lashes, at three different times.

On the morning of the departure of the schooner, he effected his escape from the town, and swam off to the schooner. He was recognised by an officer, who knew his history in part, namely, that he had become a robber and a murderer, and had been an outcast from his father's house for fifteen years. He was told that he could not be received on board, and a boat landed him again.

On the 3d of February we got under way, and were glad to leave so exposed and unpleasant an anchorage.

On the 4th and 5th, we experienced a heavy sea from the southward, with much wind.

Finding the tenders were much distressed while keeping company with the ships in the heavy sea, I made signal to them to make the best of their way to Orange Harbour, judging that I should thus save much time, as well as great wear and tear to the vessels: they would

also, by arriving before the squadron, materially aid it by acting as pilots, in case we should need such guidance. On the 6th the weather began to moderate, and the wind to haul to the westward. Shortly afterwards we had strong winds accompanied with rain. The lower scud was seen passing rapidly from the northward and westward, whilst the upper scud was moving from the south-southwest. We found the current setting to the north-by-east, about fifteen miles in twenty-four hours.

On the 8th we had a sudden fall of the barometer to 29·500 in., but without any change in the weather except fog and mist. The wind was from the west-northwest. On the 11th, the wind hauled to the southwest, when the barometer began to rise, and the weather to clear off. On the 12th, the barometer again fell to 29·500 in., which brought thick weather and rain, with a heavy bank of cumuli to the southward and westward, a precursor of bad weather. In a few hours we had heavy squalls, with hail and rain, the weather becoming sensibly colder. Temperature 46°. The next morning we made Staten Land, and soon afterwards Cape St. Diego, Tierra del Fuego. The land was broken, high, and desolate. The Straits of Le Maire were before us: we were just in time to take the tide, and with a fair wind we sailed rapidly through the strait, passing its whirls and eddies, now quite smooth, but in a short time to become vexed and fretted by the returning tide. The squadron glided along with all its canvass spread to the breeze, scarcely making a ripple under the bows. The day was a remarkably fine one for this climate, and the sight beautiful, notwithstanding the desolate appearance of the shores.

I cannot see why there should be any objection to the passage through the Straits of Le Maire, as it gives a vessel a much better chance of making the passage round the cape quickly. No danger exists here that I know of. A vessel with the tide will pass through in a few hours. As for the "race and dangerous sea," I have fully experienced it in the Porpoise on the side of Staten Land; and am well satisfied that any vessel may pass safely through it, at all times and in all weathers, or if not so disposed, may wait a few hours until the sea subsides, and the tide changes. We were only three hours in passing through. We entered the straits with studding-sails set, and left them under close-reefed topsails. Squalls issuing from the ravines were frequent and severe, and were accompanied occasionally by a little snow. The barometer had fallen to 29·250 in. Contrary to my expectations, we had on the next day delightful weather, with light and variable winds from the eastward, and at times calms. This gave me an opportunity of examining the currents. Many rips were observed,

and it was found, as the vessels were on different sides of them, they were set in opposite directions. The current on the outside of a line drawn from Cape Good Success to Cape Horn sets to the eastward, and vessels sailing to the westward would greatly facilitate their passage by beating within this line, taking advantage of the tide on its ebb, and passing between the Hermit Islands and the main through Nassau Bay, if the time is at all favourable for it. In case of necessity, they may obtain good anchorage.

To the eastward of Cape Horn I obtained a sounding with the deep sea thermometer to the depth of four hundred and fifty fathoms. The temperature at the surface was 44°, and when the thermometer came up it showed but 28°. The sounding was perpendicular, and the thermometer had been examined by two or three persons before going down, so that we were assured there was no mistake. So remarkable a circumstance surprised me not a little. It was too late to attempt another sounding that night, and I regretted in the morning to find myself on soundings in eighty fathoms water. The temperature at that depth did not fall below 46°, whilst at the surface it was at 49°.

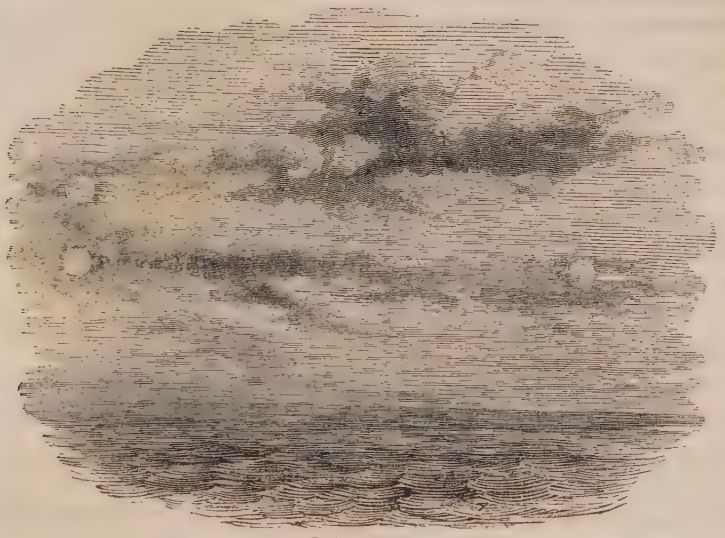
The coast of Terra del Fuego presents the same general character throughout, of high, broken, and rugged land, which appears of a uniform elevation of about one thousand or fifteen hundred feet, with here and there a peak or mountain covered with snow, rising to some four or five thousand feet. The whole wears a sombre and desolate aspect. It may be said to be iron-bound, with many high and isolated rocks, that have become detached from the land apparently by the wear of ages. Numerous unexpected indentations occur all along the coast, many of them forming harbours for small vessels, and some of them very safe ones.

On Captain King's report of Orange Harbour, I had determined to make that our place of rendezvous previous to our first Antarctic trip, and accordingly all the vessels were ordered to proceed thither. We had his directions, although we were without the chart. I felt confident I might repose full reliance in them, from his well-known ability; and I now offer an acknowledgment of their value and general accuracy.

The channels formed by the islands are deep, with no anchorage except in the coves near the rocks; but a vessel is generally safe in passing through, as there are no dangers but those which show themselves, and wherever rocks are, kelp will be found growing upon them. To pass through the kelp without previous examination is not safe. It borders all the shores of the bays and harbours, and effectually points out the shoal water.

It was my intention to pass within or to the north of the Hermit Islands into Nassau Bay, but the wind did not permit our doing so. This bay forms a large indenture in the southern coast of Terra del Fuego, a few miles to the northward of Cape Horn; it is about thirty miles east and west, by eight miles north and south, and is somewhat protected from the heavy seas by the Hermit Islands. Around the bay are found some harbours sheltered by small islands, and surrounded by precipitous rocky shores, with occasionally a small ravine forming a cove, into which streams of pure water discharge themselves, affording a safe and convenient landing-place for boats.

On the morning of the 16th, on board the Porpoise, Lieutenant Dale observed a remarkable parhelion, of which he made the annexed sketch.



PARHELION.

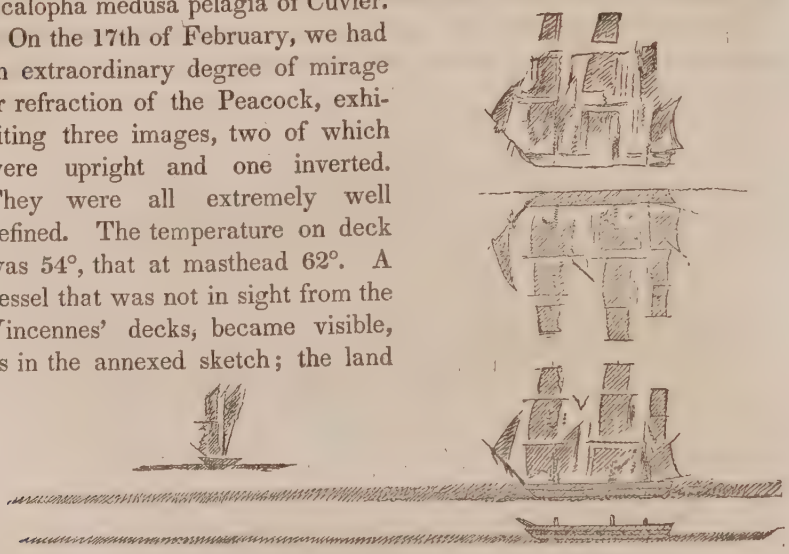
The upper is the true sun, the lower the mock sun. They were of equal size, and nearly of the same brightness. The latter was about a diameter below the former. The sun's altitude was 8°. At the same altitude, and 21° 40′ south of it, was another mock sun, showing prismatic colours towards the sun, and with a brush of light in opposition. No halo or arc was seen. The whole disappeared in about fifteen minutes. The masthead temperature was not noted on board the Porpoise; but according to that of the Vincennes, there was a difference of five degrees in temperature at the time between the deck and the masthead, showing a state of atmosphere favourable to this phenomenon. Barometer 29·55 in., temperature 42°.

In passing the cape, the weather was delightful. We sailed within two miles of this dreaded promontory, and could not but admire its

worn and weather-beaten sides, that have so long been invested with all the terrors that can beset sailors. Here we first encountered the long swell of the Pacific, but there was scarcely a ripple on its surface. Although the landscape was covered with snow, the lowest temperature we had yet experienced was 40° Fahrenheit.

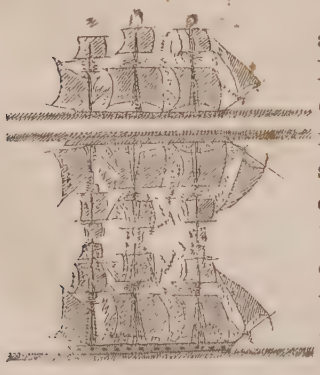
The Porpoise, just before night, made signal that she wished to speak us, and sent on board a tub filled with a large medusa, for examination by the naturalists. Its dimensions were nine feet in circumference; the brachiæ seven feet long. It proved to be the Acalopha medusa pelagia of Cuvier.

On the 17th of February, we had an extraordinary degree of mirage or refraction of the Peacock, exhibiting three images, two of which were upright and one inverted. They were all extremely well defined. The temperature on deck was 54°, that at masthead 62°. A vessel that was not in sight from the Vincennes' decks, became visible, as in the annexed sketch; the land



PEACOCK.

at the same time was much distorted, both vertically and horizontally. Barometer stood at 29·62 in.; hygrometer 10°.



VINCENNES.

On board the Peacock, similar appearances were observed of the Vincennes and Porpoise. There was, however, a greater difference between the masthead temperature and that on deck, the thermometer standing at 62° at masthead, while on deck it was but 50°, being a difference of 12°, that on board the Vincennes differed only 8°. The sketches were taken about the same time: that made of the Peacock on board the Vincennes it will be seen was the most elongated.

We continued beating into the passage between the Hermit Islands and False Cape Horn, and found great

difficulty in passing Point Lort, from the very strong outward set of the tide, which we found to run with a velocity of five miles an hour. We were not able to make way against it, though the log gave that rate of sailing. After beating about in this channel a long and dark night, with all hands up, we made sail at daylight, and at half-past 6 A. M. anchored in Orange Harbour. Here we found the Relief and tenders, all well.

The Relief, it will be remembered, was left by the boats at the mouth of Rio Harbour, on the 19th December. Lieutenant-Commandant Long found it necessary to come to anchor before they cleared Raza Island, in consequence of its falling calm, and the flood tide drifting them in towards the harbour. The next day they took their departure, and with a northerly wind steered on their course to the southward, with hazy weather.

On the 22d they experienced a current of twenty miles to the eastward.

The barometer stood lower than had been observed before, 29·79 in. The weather had the appearance of a change, the wind hauling to the southward by the west, and then to the southeast quarter, with clear and pleasant weather.

The 26th, the sea was extremely luminous in large patches; temperature of the water 73°.

On the 27th, in longitude 50° 19′ W., latitude 35° 11′ S., being three hundred miles off the mouth of the Rio Plata, they found the water very much discoloured; its temperature had fallen to 70°; no bottom was found with one hundred and fifty fathoms of line. Three sail of American whalers were in sight, one of which they spoke.

The 28th, the current was found setting to the east-southeast, twelve miles.

The 29th, in latitude 38° 54′ S., longitude 54° 00′ W., the water was still much discoloured, its temperature having fallen to 56°; air 66°. The ship was set southwest forty-six miles in twenty-four hours. No bottom was obtained with the deep sea line. On this and the next day the ship was surrounded by large numbers of birds, consisting of albatross, black petrel, &c. Shoals of porpoises and seals, and large patches of kelp, were met with. The current was now found to have changed to north-northeast, fourteen miles.

On the 31st they had reached the latitude of 40° S. Many tide rips were here observed, and the water continued very much discoloured, having the appearance of shoal river-water. Although the chart indicated bottom at fifty-five fathoms, a long distance to the eastward, none was found with one hundred and seventy fathoms. The cur-

rent was felt setting north 69° east, thirty-six miles; water fell to 55°, air 59°.

On the 1st of January, they obtained soundings in fifty-five fathoms, fine yellow and black sand; this day there occurred a thunder-storm, with rain and hail. The current was north 49° east, thirty-one miles; temperature of the water 54°, that of the air 64°.

On the 2d, latitude 41° 24′ S., longitude 58° 40′ W., the wind was from the northward and westward, and was accompanied by hazy weather; the temperature of the water rose to 58°, air 66°. The cold water which had been passed through had continued for a distance of one hundred and sixty miles; the current was found, by anchoring a boat, to set south-half-west three-fourths of a mile per hour. The same kind of soundings continued; some large dark spots were discovered in the water, but on examination they proved to be shoals of small fish resembling herring. Immense flocks of sea birds were still met with.

The current from the 4th till the 7th was setting northeast-by-east, ten to twenty miles a day; water and air continued at about 60°.

On the 5th, in dredging, they succeeded in obtaining a number of interesting shells, from deep water.

On the 9th they discovered the coast of Patagonia, near Point Lobos. It appeared low at first sight, but, on approaching it, showed a level table-land, between four and five hundred feet high. At eight miles south of Cape Raza, latitude 44° 20′ S., longitude 65° 06′ W., the water was seen to break moderately in the direction of east-northeast and west-southwest; a boat was lowered, and an officer sent to examine the shoal: the least depth of water found was fourteen fathoms.

On the 10th they rounded Cape St. Joseph's. The country was destitute of trees; only a few shrubs were seen: it appeared covered with a tall grass, and the only living thing seen was a herd of guanacoes.

During the sail down the coast the dredge continued to be used, and with success, and many interesting objects were obtained; among them, terebratulas, chitons, corallines, sponges, many small and large crustaceous animals, and large volutes (Cymbiola magellanica.)

On the 12th they again discovered land to the southward and westward, which afterwards proved to be Cape Three Points. Captain King's remarks, relative to the apex of one of the hills, as not being visible to the northeast, was found to be erroneous: it was distinctly seen on board the Relief at a distance of twenty miles. It is one of the most remarkable headlands of the coast, showing as it does above the flat table-land that is immediately behind it.

There is a shoal to the westward of Cape Three Points, which Lieutenant-Commandant Long, after anchoring, sent three boats to examine. The least water found upon it was seven fathoms; this was believed to be a continuation of the Byron Shoal.

The Bellaco Rock was seen in latitude 48° 30′ S., longitude 66° 07′ 11″ W.; there is another rock bearing S. 17° E. (true), about nine or ten miles distant, in latitude 48° 38′ 44″ S., longitude 66° 03′ 53″ W.; this last rock was found to correspond in position with the Bellaco Rock of Nodales. It would seem, therefore, that there are two rocks, and that the one given by Captain Stokes is not the true Bellaco, but that it lies in the place assigned it by Nodales in 1619; it is probable that the Relief is the first vessel that has verified the existence of both. To account for this discrepancy, it is possible that the true Bellaco was covered with the tide when Captain Stokes passed that part of the coast. At their anchorage the tide was sweeping past them at a furious rate; they had been much affected by it for the last few days, and had, on the many trials they had made, found it setting in various directions, according as the flood or ebb prevailed.

At meridian the same day they were off Port St. Julian. Lieutenant-Commandant Long thinks the vicinity of Watchman's Cape ought to be avoided, from the strong currents that exist near it.

On the 19th they made Cape Virgins, having kept along the coast until then, in from forty to sixty fathoms water, with bottom the same as before described.

On the 21st they passed Cape St. Diego with a strong northwest wind, which gradually moderated and fell calm off Good Success Bay. It was deemed prudent to wait until the threatening appearance of the weather subsided, and at 1 P. M., they anchored in Good Success Bay.

The Relief had an opportunity of proving the positions and sailing directions of Captain King, R. N., and it affords me great pleasure to say that all his observations tend to show the accuracy of the positions, and the care with which that officer has compiled his sailing directions.

No navigator frequenting this coast or passing round Cape Horn should be without the sailing directions for East and West Patagonia, and he will prize them as highly valuable after he has once used them. The admirable surveys and exertions of this officer and those under him on this coast entitle him to the rewards of his country, as well as the thanks of the civilized world.

The day they landed, no natives were seen, but many marks of a recent visit were evident on the beach and in the deserted huts. On

the morning of the 22d, at daylight, the natives appeared on the beach, shouting to them to land. Lieutenant-Commandant Long delayed his departure for a few hours, and landed with a number of the officers. As the boats approached the shore, the natives began their shouting, and advanced towards them on their landing without fear, exhibiting a pleasant air, and apparently with every feeling of confidence: they were all unarmed. An old man, who was the chief, came forward to salute them, first by patting his own breast several times, and then that of each individual of the party, making use of the word *cu-char-lie*, dwelling on the first syllable, and accenting the last, in a whining tone of voice. The meaning of cu-char-lie it was impossible to divine, for it was used for every thing. After this ceremony, they returned to the thicket, and brought forth their bows and arrows. These people were admirable mimics, and would repeat all kinds of sounds, including words, with great accuracy: the imitation was often quite ridiculous. They were naked, with the exception of a guanacoe skin, which covered them from the shoulders to the knees.

Mr. Agate's drawing of one of these Patagonians, faces the first page of this chapter.

The party of natives were seventeen in number, and with a few exceptions they were above the European height. The chief, who was the oldest man among them, was under fifty years of age, and of comparatively low stature; his son was one of the tallest, and above six feet in height. They had good figures and pleasant-looking countenances, low foreheads and high cheek-bones, with broad faces, the lower part projecting; their hair was coarse and cut short on the crown, leaving a narrow border of hair hanging down; over this they wore a kind of cap or band of skin or woollen yarn. The front teeth of all of them were very much worn, more apparent, however, in the old than in the young. On one foot they wore a rude skin sandal.

Many of them had their faces painted in red and black stripes, with clay, soot, and ashes. Their whole appearance, together with their inflamed and sore eyes, was filthy and disgusting. They were thought by the officers more nearly to approach to the Patagonians than any other natives, and were supposed to be a small tribe who visit this part of Terra del Fuego in the summer months; they were entirely different from the Petcherais, whom we afterwards saw at Orange Harbour.

None of their women or children were seen, but they were thought to be not far distant in the wood, as they objected to any of our people going towards it, and showed much alarm when guns were pointed in that direction. They seemed to have a knowledge of fire-

arms, which they called *eu*, or spirit; and *kai-eu*, which they frequently uttered with gestures, was thought to indicate their Great Spirit, or God.

PATAGONIANS.

They had little apparent curiosity, and nothing seemed to attract or cause them surprise; their principal characteristic seemed to be jealousy. Though they are a simple race, they are not wanting in cunning; and it was with great difficulty that they could be prevailed upon to part with their bows and arrows in trade, which they however did, after asking permission from their chief: this was always necessary for them to obtain before closing a bargain. They have had communication frequently before with Europeans; pieces of many articles of European manufacture were seen in their possession, such as glass-beads, &c. They refused tobacco, whiskey, bread, or meat, and were only desirous of getting old iron, nails, and pieces of hoop-iron.

Their food consists principally of fish and shell-fish. Their fishing apparatus is made of the dorsal fin of a fish, tied to a thin slip of whalebone, in the form of a barb; this serves as a good hook, and with it they obtain a supply of this food. Their arms consisted altogether of bows and arrows. The natives had the common dog, which they seemed to prize much.

Mr. Rich employed his time in botanical researches: the prominent plants were Berberes, Winteria, Vaccinium, Andromeda, Compositæ, (some woody) Cruciferæ, Umbelliferæ, &c. A number of these were

just putting forth their flowering buds. Scurvy-grasses and wild celery abounded.

The tracks of the guanacoe were seen, and some land-shells were obtained.

Captain King's description of this bay was found to be correct; the position of it by the Relief's chronometers was 65° 11′ 31″ W., by sights taken on shore, which is 2′ 13″ to the west of the longitude assigned it by him. The latitude was not obtained, but that given by Captain King, 54° 48′ S., is believed to be correct.

The morning of the 23d they left Good Success Bay. On the 25th, having made but little progress to the westward, and the usual and certain appearance of bad weather approaching, Lieutenant-Commandant Long determined to anchor under New Island to await it, which was accordingly done at five o'clock the same evening, in thirty fathoms. Shortly afterwards it blew furiously, with rain and hail, which continued throughout the night.

The plants were the same as those seen at Good Success Bay, but were much farther advanced, being in full flower. Several heath-like plants and many new grasses were procured. During the time they were at anchor, some tide was perceptible, but it was quite irregular.

The latitude of the anchorage was determined to be 55° 17′ S. longitude 66° 13′ W. It is not deemed a suitable or safe anchorage, unless well provided with good ground-tackle.

On the 26th they again were under way for Orange Harbour, which they reached four days afterwards, where they were employed preparing for sea and accumulating fire-wood, preparatory to the arrival of the rest of the squadron. They had also established a light-house on the top of Burnt Island, which forms the protection to Orange Harbour on the east, as directed by their orders. On the 17th of February, as before stated, the Relief was joined by the rest of the squadron.

FUEGIAN PADDLES.

CHAPTER VI.

CONTENTS.

ORANGE HARBOUR — PLAN OF THE SQUADRON'S OPERATIONS — NATIVES — THEIR APPEARANCE—THEIR HUTS—ARRIVAL OF NATIVES—THEIR TALENT FOR MIMICKRY —VISIT TO THEIR HUTS — THEIR FOOD — SOIL NEAR ORANGE HARBOUR — TIDES — WHALES.

CHAPTER VI.

TERRA DEL FUEGO.

1839.

Orange Harbour is on the western side of Nassau Bay, separated and protected from it by Burnt Island. It is nearly land-locked, and is the safest harbour on the coast. The hills on each side, after several undulations, rise into conical peaks, and the naked rock is every where broken into a jagged outline, with no creeping plants to soften or take off its harshness. Every thing has a bleak and wintry appearance, and is in excellent keeping with the climate; yet the scenery about it is pleasing to the eye, bounded on all sides by undulating hills, which are covered with evergreen foliage. Distant mountains, some of which are capped with snow, shooting up in a variety of forms, seen beyond the extensive bays, form a fine background. From the vessels, the hills look like smooth downs, and if it were not for the inclemency and fitfulness of the weather, they might be contemplated with some pleasure.

The hills are covered with dense forests of beech, birch, willow, and winter-bark. Some of the former trees are forty or fifty feet high, having all their tops bent to the northeast by the prevailing southwest winds. They are remarkably even as to height, having more the look, at a distance, of heath, than of forest trees.

The whole coast has the appearance of being of recent volcanic rocks, but all our investigations tended to prove the contrary. We nowhere found any cellular lava, pumice, or obsidian, nor was there any granite, or other primitive rock seen, though reported by Captain King as existing. The rock was trachytic, or of trap formation, apparently having undergone more or less action by fire.

Immediately on our arrival at Orange Harbour, active preparations were made for a short cruise to the Antarctic. Although the season

was late, I at least anticipated getting some experience among the ice; and I supposed that the lateness of the season would have allowed it to detach itself from the shores of Palmer's Land, and would permit as near an approach as possible to its main body or barrier, in the vicinity of Cook's Ne Plus Ultra.

ORANGE HARBOUR, TERRA DEL FUEGO.

Agreeably to my instructions, such disposition was made of the squadron as seemed best calculated to obtain the necessary results in the different departments. Captain Hudson, with the Peacock, and the Flying-Fish, under Lieutenant Walker, as a tender, were ordered to the westward, as far as the Ne Plus Ultra of Cook. I went in the Porpoise, Lieutenant-Commandant Ringgold, accompanied by the Sea-Gull, Lieutenant Johnson, to pass to the south, for the purpose if possible of exploring the southeast side of Palmer's Land, or, should an opportunity offer, of proceeding further south. The Relief, Lieutenant-Commandant Long, was ordered into the Straits of Magellan, through the Brecknock Passage and Cockburn's Sound, with part of the gentlemen of the scientific corps, in order to enlarge our field of operations. Mr. Peale volunteered to go south in the Peacock.

The Vincennes was safely moored in Orange Harbour, and left under the charge of Lieutenant Craven, to carry on the investigations, surveys, &c. &c. Messrs. Couthouy and Drayton, of the scientific corps, remained in the Vincennes. Lieutenant Carr was put in charge of the observatory.

In making the changes necessary for this cruise to the south, I regretted extremely being compelled, from the want of junior officers, to supersede temporarily both Passed Midshipmen Reid and Knox in command of the two tenders. These officers had not their superiors in the squadron for the situations they occupied; but the duty I owed the Expedition and country compelled me to do it, and also to refuse their application to be transferred from the tenders, for I was well satisfied, as long as they were on board, the vessels would be well taken care of. I had a very high opinion of Mr. Reid, from the experience I had had of him; and as respects Mr. Knox, I feel it my duty here to acknowledge how much the Expedition is indebted to him for his services on board the Flying-Fish. He not only had the ability, but the necessary perseverance and ambition, to perform his duties well. So arduous were they, that I was for a time obliged to transfer him to my ship on account of his health. The moment his health permitted it, he was again put in command of the Flying-Fish, to the great advantage of the service. In according thus much to his industry, ability, and zeal, I am well satisfied that I but speak the opinion of every officer in the squadron.

The vessels were well supplied with fuel, provisions, and various antiscorbutics, for ten months. A spot for the observatory was fixed upon, and orders left for the duties to be performed during the absence of the squadron.*

The 22d of February was duly celebrated by the hoisting of flags, but we had not time to make a holiday of it.

During our stay, we had at various times, visits from the natives. They were all at first very shy, but after they found our friendly disposition towards them, they became more sociable and confiding.

Before our departure from Orange Harbour, a bark canoe came alongside with an Indian, his squaw, and four children. The tribe to which they belonged is known by the name of the Petcherai Indians. They were entirely naked, with the exception of a small piece of seal-skin, only sufficient to cover one shoulder, and which is generally worn on the side from which the wind blows, affording them some little shelter against its piercing influence.

They were not more than five feet high, of a light copper colour, which is much concealed by smut and dirt, particularly on their faces, which they mark vertically with charcoal. They have short faces, narrow foreheads, and high cheek-bones. Their eyes are small and

* The instructions issued for the proceedings of the vessels will be found embraced in the Appendix, from XXV. to XXX. inclusive.

usually black, the upper eyelids in the inner corner overlapping the under one, and bear a strong resemblance to those of the Chinese. Their nose is broad and flat, with wide-spread nostrils, mouth large, teeth white, large, and regular. The hair is long, lank, and black, hanging over the face, and is covered with white ashes, which gives them a hideous appearance. The whole face is compressed. Their bodies are remarkable from the great developement of the chest, shoulders, and vertebral column; their arms are long, and out of proportion; their legs small and ill made. There is in fact little difference between the size of the ankle and leg; and when standing, the skin at the knee hangs in a large loose fold. In some, the muscles of the leg appear almost wanting, and possess very little strength. This want of developement in the muscles of the legs is owing to their constant sitting posture, both in their huts and canoes. Their skin is sensibly colder than ours. It is impossible to fancy any thing in human nature more

NATIVE OF TERRA DEL FUEGO.

filthy. They are an ill-shapen and ugly race.* They have little or no idea of the relative value of articles, even of those that one would suppose were of the utmost use to them, such as iron and glass-ware. A glass bottle broken into pieces, is valued as much as a knife. Red

* For their dimensions, see Table of Comparative Proportions, at the end of the work.

flannel, torn into stripes, pleases them more than in the piece; they wound it around their heads, as a kind of turban, and it was amusing to see their satisfaction at this small acquisition.

The children were quite small, and nestled in the bottom of the canoe on some dry grass. The woman and eldest boy paddled the canoe, the man being employed to bail out the water and attend to the fire, which is always carried in the bottom of the canoe, on a few stones and ashes, which the water surrounds.

FUEGIANS AND CANOE.

Their canoes are constructed of bark, are very frail, and sewed with shreds of whalebone, sealskin, and twigs. They are sharp at both ends, and are kept in shape as well as strengthened by a number of stretchers lashed to the gunwale.

These Indians seldom venture outside the kelp, by the aid of which they pull themselves along; and their paddles are so small as to be of little use in propelling their canoes, unless it is calm. Some of the officers thought they recognised a party on the Hermit Islands that had been on board ship at Orange Harbour. If this was the case, they must have ventured across the Bay of Nassau, a distance of some ten or twelve miles. This, if correct, would go to prove that there is more intercourse among them than their frail barks would lead one to expect.

Their huts are generally found built close to the shore, at the head of some small bay, in a secluded spot, and sheltered from the prevailing winds. They are built of boughs or small trees, stuck in the earth,

and brought together at the top, where they are firmly bound by bark, sedge, and twigs. Smaller branches are then interlaced, forming a tolerably compact wicker-work, and on this, grass, turf, and bark are laid, making the hut quite warm, and impervious to the wind and snow, though not quite so to the rain. The usual dimensions of these huts are seven or eight feet in diameter, and about four or five feet in height. They have an oval hole to creep in at. The fire is built in a small excavation in the middle of the hut. The floor is of clay, which has the appearance of having been well kneaded. The usual accom-

FUEGIANS AND HUT.

paniment of a hut is a conical pile of shells opposite the door, nearly as large as the hut itself.

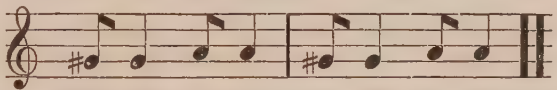
Their occupancy of a hut seems to be limited to the supply of shell-fish, consisting of mussels and limpets, in the neighbourhood.

These natives are never seen but in their huts or canoes. The impediments to their communication by land are great, growing out of the mountainous and rocky character of the country, intersected with inlets deep and impassable, and in most places bounded by abrupt precipices, together with a soil which may be termed a quagmire, on which it is difficult to walk. This prevails on the hills as well as in the plains and valleys. The impenetrable nature of the forest, with the dense undergrowth of thorny bushes, renders it impossible for them to overcome or contend with these difficulties. They appear to live in families, and not in tribes, and do not seem to acknowledge any chief.

On the 11th of March three bark canoes arrived, containing four men, four women, and a girl about sixteen years old, four little boys and four infants, one of the latter about a week old, and quite naked. The thermometer was at 46° Fahrenheit. They had rude weapons, viz., slings to throw stones, three rude spears, pointed at the end with bone, and notched on one side with barbed teeth. With this they catch their fish, which are in great quantities among the kelp. Two of the natives were induced to come on board, after they had been alongside for upwards of an hour, and received many presents, for

which they gave their spears, a dog, and some of their rude native trinkets. They did not show or express surprise at any thing on board, except when seeing one of the carpenters engaged in boring a hole with a screw-auger through a plank, which would have been a long task for them. They were very talkative, smiling when spoken to, and often bursting into loud laughter, but instantly settling into their natural serious and sober cast.

They were found to be great mimics, both in gesture and sound, and would repeat any word of our language, with great correctness of pronunciation. Their imitations of sounds were truly astonishing. One of them ascended and descended the octave perfectly, following the sounds of the violin correctly. It was then found he could sound the common chords, and follow through the semitone scale, with scarcely an error. They have all musical voices, speak in the note G sharp, ending with the semitone A, when asking for presents, and were continually singing,



Their mimickry became annoying, and precluded our getting at any of their words or ideas. It not only extended to words or sounds, but actions also, and was at times truly ridiculous. The usual manner of interrogating for names was quite unsuccessful. On pointing to the nose, for instance, they did the same. Any thing they saw done they would mimic, and with an extraordinary degree of accuracy. On these canoes approaching the ship, the principal one of the family, or chief, standing up in his canoe, made a harangue. He spoke in G natural, and did not vary his voice more than a semitone. The pitch of the voice of the female is an octave higher. Although they have been heard to shout quite loud, yet they cannot endure a noise. When the drum beat, or a gun was fired, they invariably stopped their ears. They always speak to each other in a whisper. Their cautious manner and movements prove them to be a timid race. The men are exceedingly jealous of their women, and will not allow any one, if they can help it, to enter their huts, particularly boys.

The women were never suffered to come on board. They appeared modest in the presence of strangers. They never move from a sitting posture, or rather a squat, with their knees close together, reaching to their chin, their feet in contact and touching the lower part of the body. They are extremely ugly. Their hands and feet were small and well-shaped, and from appearance they are not accustomed to do

any hard work. They appear very fond and seem careful of their young children, though on several occasions they offered them for sale for a trifle. They have their faces smutted all over, and it was thought, from the hideous appearance of the females, produced in part by their being painted and smutted, that they had been disfigured by the men previous to coming alongside. It was remarked that when one of them saw herself in a looking-glass, she burst into tears, as Jack thought from pure mortification.

The men are employed in building the huts, obtaining food, and providing for their other wants. The women were generally seen paddling their canoes.

When this party of natives left the ship and reached the shore, the women remained in their canoes, and the men began building their temporary huts; the little children were seen capering quite naked on the beach, although the thermometer was at 40°. On the hut being finished, which occupied about an hour, the women went on shore to take possession of it. They all seemed quite happy and contented.

Before they left the ship, the greater part of them were dressed in old clothes, that had been given to them by the officers and men, who all showed themselves extremely anxious "to make them comfortable." This gave rise to much merriment, as Jack was not disposed to allow any difficulties to interfere in the fitting. If the jackets proved too tight across the shoulders, which they invariably were, a slit down the back effectually remedied the defect. If a pair of trousers was found too small around the waist, the knife was again resorted to, and in some cases a fit was made by severing the legs. The most difficult fit, and the one which produced the most merriment, was that of a woman to whom an old coat was given. This she concluded belonged to her nether limbs, and no signs, hints, or shouts, could correct her mistake. Her feet were thrust through the sleeves, and after hard squeezing she succeeded in drawing them on. With the skirts brought up in front, she took her seat in the canoe with great satisfaction, amid a roar of laughter from all who saw her.

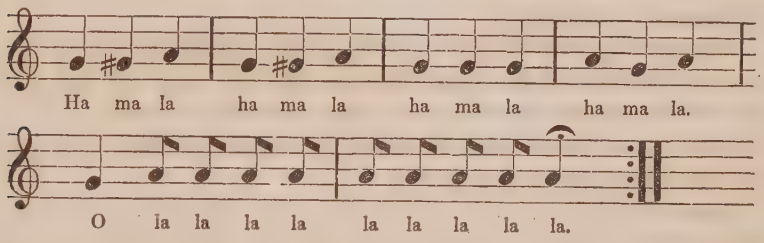
Towards evening, Messrs. Waldron and Drayton visited their huts. Before they reached the shore, the natives were seen making a fire on the beach, for their reception, evidently to avoid their entering their huts.

On landing, one of the men seemed anxious to talk with them. He pointed to the ship, and tried to express many things by gestures; then pointed to the southeast, and then again to the ship, after which, clasping his hands, as in our mode of prayer, he said "Eloah, Eloah," as though he thought we had come from God.

After a little time, they gained admittance to the hut. The men creeping in first, squatted themselves directly in front of the women, all holding out the small piece of sealskin to allow the heat to reach their bodies. The women were squatted three deep behind the men, the oldest in front nestling the infants.

After being in the hut, Mr. Drayton endeavoured to call the attention of the man who had made signs to him before entering, to know whether they had any idea of a Supreme Being. The same man then put his hands together, repeating as before, "Eloah, Eloah." From his manner, it was inferred that they had some idea of God or a Supreme Being.

Their mode of expressing friendship is by jumping up and down. They made Messrs. Waldron and Drayton jump with them on the beach, before entering the hut, took hold of their arms, facing them, and jumping two or three inches from the ground, making them keep time to the following song:



All our endeavours to find out how they ignited their fire proved unavailing. It must be exceedingly difficult for them to accomplish, judging from the care they take of it, always carrying it with them in their canoes, and the danger they thus run of injuring themselves by it.

Their food consists of limpets, mussels, and other shell-fish. Quantities of fish, and some seals, are now and then taken among the kelp, and with berries of various kinds, and wild celery, they do not want. They seldom cook their food much. The shell-fish are detached from the shell by heat, and the fish are partly roasted in their skins, without being cleaned.

When on board, one of them was induced to sit at the dinner-table; after a few lessons, he handled his knife and fork with much dexterity. He refused both spirits and wine, but was very fond of sweetened water. Salt provisions were not at all to his liking, but rice and plum-pudding were agreeable to his taste, and he literally crammed them into his mouth. After his appetite had been satisfied, he was in great good humour, singing his "Hey meh leh," dancing and laughing.

His mimickry prevented any satisfactory inquiries being made of him relative to a vocabulary.

Some of the officers painted the faces of these natives black, white, and red: this delighted them very much, and it was quite amusing to see the grimaces made by them before a looking-glass.

One of these natives remained on board for upwards of a week, and being washed and combed, he became two or three shades lighter in colour. Clothes were put on him. He was about twenty-three years of age; and was unwell the whole time he was on board, from eating such quantities of rice, &c. His astonishment was very great on attending divine service. The moment the chaplain began to read from the book, his eyes were riveted upon him, where they remained as long as he continued to read. At the end of the week he became dissatisfied, and was set on shore, and soon appeared naked again. It was observed on presents being made, that those who did not receive any began a sort of whining cry, putting on the most doleful-looking countenances imaginable.

They are much addicted to theft, if any opportunity offers. The night before they left the bay, they stole and cut up one of the wind-sails, which had been scrubbed and hung up on shore to dry.

Although we had no absolute proof it, we are inclined to the belief that they bury their dead in caves.

There is a black-coloured moss that covers the ground in places, giving it the appearance of having been burnt. Many small ponds are met with, as though the peat had been dug up from the place, and the holes filled with water. There is great plenty of scurvy-grass and wild celery close to the beach.

Here any quantity of water may be obtained on the top and sloping sides of the hills.

The decomposition of the feldspathic rocks appears to be going on rapidly. This, combined with vegetable matter, forms a rich soil; but it is so exceedingly wet from the constant rains and snows, that it is very questionable if any agricultural operations could succeed.

At Orange Harbour the tide was found to have four feet rise and fall. High water, full and change, at 4 P. M. Among the Hermit Islands it seems to be affected by the winds in the offing The flood sets to the east.

Large numbers of humpback whales were seen in March, about Orange Harbour.

In a small cove on New Island, a different description of hut was seen by the officers of the Relief. Not having met with any natives, it was not in their power to ascertain if it belonged to the same tribe.

It was built of logs, with their upper ends leaning together, in the form of a cone, and nearly circular at the base; the interstices were filled with grass, leaves, and earth, in which some grasses had taken root, and were growing. It is represented in the tail-piece.

NATIVE HUT.

CHAPTER VII.

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CHAPTER VII.

SOUTHERN CRUISE.

1839.

On the 25th of February, having completed the arrangements for the southern cruise, and prepared instructions for the continuance of the duties of the Expedition in case of my being detained among the ice, the signal was ordered to be made for the vessels to get under way, when I joined the Porpoise. Very many of my crew were desirous of following me, and expressed regrets and disappointment that the Vincennes was not going south. All I could do, was to promise them enough of Antarctic cruising the next year, and I believe they are now all satisfied that I kept my word. About 7 A. M., we left the harbour, with a light breeze from the north, having the Sea-Gull, of which vessel Lieutenant Johnson was in charge, in company. On passing the other vessels of the squadron, we received three hearty cheers, which were duly returned.

Various causes conspired to render our short stay in Orange Harbour the turning point of the discipline of the cruise. I cannot but express my surprise, even at this distant day, that any officers embarked in this undertaking could have so far lost sight of their duty as to attempt to throw obstacles in the way of the prompt execution of the duties they owed to the country, and the service on which they were engaged, or would have allowed selfish feelings to predominate over those for the public good. Prompt and energetic action soon put an end to these small difficulties.

At the mouth of the harbour, Captain Hudson and the few officers who had accompanied us, took their leave. I must own at that moment I felt greatly depressed, for I was well aware that we had many, very many dangers to encounter before meeting again. But there is a feeling produced by the kind of service on which we were engaged, that gives a stout heart, braces it for meeting almost every emergency that may

happen, and causes one to look forward with hope to overcome the difficulties that may lie in the path. After a short time we saw the Peacock and Flying-Fish under sail, following us.

The wind continued light, with fine weather, until the afternoon. The whole scenery around us was viewed to great advantage, under a mild state of the atmosphere, taking away from it the usual gloomy aspect which a sky, overcast and boisterous, gives. A dense bank of cumuli in the southwest foretold that we were not long to enjoy such moderate weather. About 4 P. M., a heavy squall struck us, which soon took us clear of the islands, on our course to the southward.

On the 26th, we discovered a sail, which proved to be the whale-ship America, from New Zealand, bound to New York, and afforded us an opportunity of writing home, which we gladly availed ourselves of. The master of the America informed me that he had experienced constant heavy winds, and had been thirty-five days from New Zealand; that the ship was very leaky, but having a full cargo of three thousand eight hundred barrels of oil, he was in great spirits. I have seldom seen at sea a more uncombed and dirty set of mariners than his crew. How they preserve any tolerable state of health I know not, and it is not at all surprising that the ravages of scurvy should be felt on board of some vessels belonging to the whaling fleet, if this is the usual state in which they are kept.

After delivering our letters, we bore away to the southeast, the wind inclining to the northwest and blowing heavy, with a high and remarkably regular sea following. This afforded me an opportunity I had long desired, for making observations to determine the height of the waves, together with their width and velocity. It is obviously very difficult to do this with correctness. I shall therefore state the means which I adopted, in order that it may be perceived what reliance is to be placed on the results.

This opportunity was far more favourable than that which occurred off Madeira, when I was enabled to get only an approximation to their velocity: they were not then urged on by any fresh impetus, as in the present case.

The Porpoise was directly ahead of the Sea-Gull, and but two waves apart; the rate of sailing was about eight knots an hour, both vessels being apparently very steady. In heaving the log, I found that the chip, in drawing in the line, was, when on the top of the next wave astern, distant by line three hundred and eighty feet, equal to one-sixteenth of a mile, and the schooner being on the next wave, was twice the distance, or one-eighth of a mile. The time occupied for a wave to pass from the schooner to the brig was thirteen seconds,

taking the mean of many trials, from which none varied more than a second and a half. This gave about twenty-six and a half miles in an hour for their apparent progressive motion. In order to get their height, I took the opportunity when the schooner was in the trough of the sea, and my eye on board the Porpoise in the horizon, to observe where it cut the mast: the wood-cut will illustrate it.

This gave me thirty-two feet. The waves ran higher and more regular on this occasion than I have seen them at any other time during the cruise.

We had many albatrosses hovering about, and at times resting as it were immovable in the storm, some gray petrels, and Cape pigeons in numbers. The weather becoming thick, and the temperature of the water having fallen to 32°, I deemed it prudent to heave-to during the darkness.

The 28th came in more moderate. As soon as it was light we again made sail to the south. Towards noon the wind hauled to the northward and brought rain. The temperature of the water was 37°. The wind now again hauled to the southward and blew fresh. At noon we had reached the latitude of 61° 20′ S., longitude 60° 49′ W. We found ourselves obliged to lay-to this night also, it being too dark to run.

At daylight on the 1st of March we had snow in flurries, and the first ice-islands were made. They excited much curiosity, and appeared to have been a good deal worn, as though the sea had been washing over them for some time. They were of small size in comparison with those we afterwards saw, but being unused to the sight, we thought them magnificent. At noon we made land, which proved to be Ridley's Island. It was high, broken, and rugged, with the top covered with snow. The rocks had a basaltic appearance, and many were detached from the main body of the island, with numerous high pinnacles, very much worn by the sea. The surf was too great to attempt a landing for the purpose of procuring specimens. As we closed in with the land, we lowered a boat and tried the current, which was found setting to the north-northwest, two fathoms per hour.

At 6 P. M. we had several ice-islands in sight, Cape Melville bearing south-by-east (true). We now had light winds from the south-southwest.

The north foreland of King George's Island was in sight, and found to be well placed on the charts. The appearance of all this land is volcanic; it is from eight hundred to one thousand feet high. The upper part is covered and the valleys filled with snow of great depth. Before night we had several other islands in sight, with many bergs and much drift-ice.

On the 2d, at daylight, we made O'Brien's and Aspland's Islands, to the eastward, with many ice-islands, some of a tabular form, and from half a mile to a mile in length. The temperature of the water was 34°. Through the fog and mist, we got a sight of Bridgeman's Island, and stood for it, with the intention of landing on it. The fog cleared off as we approached it, and we could perceive distinctly the smoke issuing from its sides. We made it in latitude 62° 06′ S., and longitude 57° 10′ W. I determined to land, although the fog was hovering in the horizon around us, and ordered a boat to be prepared. While in the act of getting ready, in less than ten minutes, we were enveloped in a fog so dense, that we could not see three lengths of the brig. We were now a short distance from and under the lee of the island, and perceived a strong sulphureous smell. We waited for some time, in hopes of its clearing, but we were disappointed, and I therefore deemed it advisable to proceed under short sail, feeling our way to the southward, with the expectation, every moment, of encountering icebergs.

This island is about six hundred feet high, and of the shape of a flattened dome. The sea was quite smooth, but the long swell was heard dashing against it and the icebergs as we passed them.

On the 3d we filled away at daylight, and stood for Palmer's Land. The birds now had very much increased, Cape pigeons, with the gray and black petrel, and occasionally penguins, swimming about us in all directions, uttering their discordant screams: they seemed astonished at encountering so unusual an object as a vessel in these frozen seas. At $6^h\ 30^m$ we made land, which I took to be Mount Hope, the eastern point of Palmer's Land. By 8 A. M. we had penetrated among the numerous icebergs, until we found it impossible to go farther. I have rarely seen a finer sight. The sea was literally studded with these beautiful masses, some of pure white, others showing all the shades of the opal, others emerald green, and occasionally here and there some of a deep black, forming a strong contrast to the pure white. Near to us, we discovered three small islets, and gave them the name of the Adventure Islets; while beyond, and above all, rose two high mountains, one of which was Mount Hope. I place the eastern extremity of Palmer's Land, or Mount Hope, in longitude 57° 55′ W., latitude 63° 25′ S.

We found the coast to trend off to the southeast, and I judged we could see it trending from twenty-five to thirty miles. We had now ascertained, beyond a doubt, that there was no open space next to the land, as I had been led to believe would be found, so late in the season. The whole area was studded with icebergs, which it now became necessary to get clear of, if possible, before night set in.

It was a day of great excitement to all, for we had ice of all kinds and descriptions to encounter, from the iceberg of huge quadrangular shape, with its stratified appearance, to the sunken and deceptive mass, that it was difficult to perceive before it was under the bow. Our situation was critical, but the weather favoured us for a few hours. On clearing these dangers, we kept off to the southward and westward, under all sail, and at 8 P. M. we counted eighty large ice-islands in sight. Afterwards it became so thick with mist and fog, as to render it necessary to lay-to till daylight, before which time we had a heavy snow-storm. The temperature of the water had fallen to 29°; air 28°. At one hundred fathoms depth we found the former 29°. A strong gale now set in from the southward and westward. The brig's deck was covered with ice and snow, and the weather became excessively damp and cold. The men were suffering, not only from want of sufficient room to accommodate the numbers in the vessel, but from the inadequacy of the clothing with which they had been supplied. Although purchased by the government at great expense, it was found to be entirely unworthy the service, and inferior in every way to the samples exhibited. This was the case with all the articles of this description that were provided for the Expedition. Not having been able to satisfy myself to whom the blame is to be attributed, contractors or inspectors, I hesitate to give their names publicity. The deception is in my opinion to be attributed to both.

On the 5th of March the gale had increased. The tender Sea-Gull being in close company, both vessels were in imminent danger. At 3 A. M. we narrowly escaped several icebergs. At 4 A. M., it blew a very heavy gale from the southwest; the temperature of the air fell to 27°, and that of the water was 29°; the ice formed rapidly on the deck, and covered the rigging, so much as to render it difficult to work either the brig or schooner; dangers beset us in every direction, and it required all the watchfulness we were possessed of to avoid them.

From the state of the weather, the lateness of the season, and the difficulty of seeing around us, not only during the several hours of the night, but even in the daytime, the constant fogs and mist in which we had been for several hours every day enveloped, rendered our exertions abortive, and precluded the possibility of doing any thing

more than to attend to the sailing of the vessels. These reasons determined me to give up the endeavour to proceed farther south, feeling convinced that the season for such explorations had gone by. I therefore ordered the Sea-Gull to return to Orange Harbour, well knowing that her situation was much worse than our own; directing her to touch at Deception Island on the way, while we proceeded to the northward to examine some of the other islands.

PORPOISE AND SCHOONER SEPARATING.

When we bore away, I had the intention of passing towards the assigned situation of the Aurora Isles, but I found the crew so much enfeebled by their constant exposure, whilst some of them were affected with incipient scurvy, that I concluded it was better to return to Orange Harbour as soon as possible. We encountered great numbers of ice-islands, of large size; but I shall defer speaking of their formation, &c., until I relate my second trip to the Antarctic Circle, the following year, and shall only remark here, that they were similar in formation and appearance to those then seen.

We continued under easy sail, enveloped in fogs, and falling in repeatedly with icebergs close aboard, from which at times we escaped with difficulty.

On the 6th March the wind shifted to the northward, with snow. Great numbers of penguins, Cape pigeons, and whales, were around the vessel.

The 7th commenced with rain and snow. The wind was light and from the westward; it gradually hauled to the southwestward and blew fresh. While making all way to the northward, the fog lifted, and high land was reported within a short distance of us. A few moments more, and we should have been wrecked. This proved to be Elephant Island. We found from its position that we had been set upwards of fifty miles to the eastward, in the last four days, by the current. We passed to leeward of it. The sea was too high to attempt a landing. In the afternoon it cleared, and from our observations we found Cape Belsham, its eastern point, well placed. We passed between it and Cornwallis Island. The Seal Rocks were also seen and observed upon.

Elephant Island is high and of volcanic appearance; its valleys were filled with ice and snow. We tried the deep-sea temperature. At the surface it was found to be 36°, whilst at three hundred fathoms it was 33°.

We now stood to the northward, and until the 14th had continued bad weather, accompanied with heavy seas. On this day we made the land.

On the 16th we were off the Straits of Le Maire, where I again tried the deep-sea temperature, with a wire sounding-line, which parted at three hundred and forty fathoms, and we lost the apparatus. I then made a second experiment, with a line of rope four hundred fathoms in length. The temperature of the surface was 44°, of the water below, 37°. This was about sixty miles to the eastward of the place where I had sounded before, on the 15th February, when passing around Cape Horn in the Vincennes.

March 17th, we had light winds from the eastward, and a smooth sea, with delightful weather. There was, however, a heavy bank of cumuli to the southwestward, and after a few hours' calm, the wind came from that quarter, and began to blow fresh, accompanied with heavy squalls. We did not succeed that night in reaching New Island, where it was my intention to have anchored and rode out the gale. We in consequence found ourselves the next morning thirty miles to the eastward of our position on the previous evening, having drifted at the rate of three miles an hour. From appearances, I inferred that the gale had set in for several days; I therefore determined to make for Good Success Bay, and await the breaking up of

the storm, being satisfied we could make little progress to the westward during its continuance.

We anchored in the bay early in the afternoon, when we took our boats and went on shore for a few hours. There was but little surf when we landed, but it rapidly increased, and one of the boats in attempting to pass through it filled, and after several ineffectual attempts, did not succeed in getting off. A boat was sent to assist, but returned with a report that no relief could be rendered them, and that they had determined to remain until morning.

In the morning the surf had very much increased. The sea setting in the bay, rendered our situation uncomfortable, and somewhat dangerous, as we were exposed to the force of it and the wind, which had hauled to the southeast.

At 1 P. M., being desirous of sending provisions to the party on shore, Lieutenant Hartstein was ordered to take charge of two boats, to communicate with them, and give them supplies.

My intention was to effect this by having a line floated on shore by which to haul the seal-boat or yawl, having provisions lashed in her, through the surf by the party on shore. Instructions to this effect were given to Lieutenant Hartstein, who was enjoined not to risk the lives of the men. We watched them attentively with our glasses. Shortly after they had anchored their boats outside the surf, we perceived Lieutenant Hartstein and three men strapping on their life-preservers, and preparing themselves for a landing in the boat. I felt under great apprehensions of accident. Placing, however, great confidence in that officer's judgment, I was assured he would not risk the lives of the men, and his own, on such an occasion. It was with great anxiety we watched their proceedings; in a few moments afterwards they were separated from the other boat, still apparently making preparations. In an instant they were borne on the crest of the rollers, and immediately disappeared. Some few minutes after, the boat was seen bottom up among the rollers. Presently, the other boat's crew were seen pulling in haste towards a person; one was picked up, then another. We looked intently for the rest, but no signs of them were seen. We then endeavoured to count the party on shore, and we thought it had increased, but the constant motion of the vessel rendered it impossible to keep our glasses fixed on them for a sufficient length of time to ascertain their number. We now saw the boat returning; it soon reached the vessel, and Lieutenant Hartstein and Samuel Stretch proved to be the two that had been saved. Both were much exhausted. The persons in the boat, while yet at a distance

from the brig, to relieve our anxiety, gave us the joyful intelligence that Williams and Moore had reached the shore in safety.

Lieutenant Hartstein, on recovering from his exhaustion, informed me, that on arriving at the surf and anchoring the boat, he found it impossible to carry into effect the intention of getting a line on shore. He then concluded that in the surf-boat, with oars, and a line from the boat outside, they might land in safety. Samuel Stretch, John Williams, and Samuel Moore, volunteered to accompany him. They strapped on their life-preservers, with which they were provided, and were preparing themselves for the trial, when a wave curling without them, carried them forward with rapidity; in an instant the boat was thrown end over, and they found themselves struggling for life in a furious surf. Had it not been for the life-preservers, they must all have been drowned. The under-tow assisted in bringing Stretch and himself out, (neither of whom could swim,) together with the boat. Williams and Moore swam to the beach.

The night proved dark and stormy, and the squalls were furious.

The morning of the 21st dawned with no better prospect. All our endeavours to get a supply of provisions to the party on shore by kites, &c., failed, and it was now deemed advisable for the safety of the brig, to slip our cables and go to sea on the making of the flood, which sets out of the bay. Previous to this time, we were employed in supplying the yawl with provisions, intending to leave her as a buoy to our cable and anchor; and, to prevent her from sinking, our India-rubber life-spars were lashed in her.

When the time arrived, there appeared no alteration for the better. We slipped our cable, and stood out of the bay under our storm-sails. A very heavy sea was encountered in the straits, and particularly in the race that is formed on the Staten Land side; but we passed through without difficulty or accident. When we got under the lee of that island, we had smooth water, almost a calm, and moderate weather. The contrast was great indeed, from the violent gale we had just left.

On the 22d and 23d we had light winds, and were drifted to the northward some thirty miles, occasionally passing through rips and tide eddies. We had generally between fifty and sixty fathoms water, with soundings of sand, shells, and coral.

On the 24th, it being calm, we anchored in forty-four fathoms, off Cape St. Diego, to await the tide, and found the current running at the greatest strength two and a half miles per hour.

We did not again reach Good Success Bay until the night of the 25th, after five days' absence, when we found the party had got the

provisions, and were all well. At daylight on the 26th they came on board. On the 27th we recovered our anchor, and on the 28th set sail for Orange Harbour.

On the evening of the 29th, having entered Nassau Bay, (it being quite dark,) as we were standing as we supposed over for Orange Harbour, we heard the surf, and suddenly discovered that we were close in and among the kelp; we immediately anchored, in six fathoms.

At daylight we found ourselves in a snug cove of Wollaston's Island, and discovered that it was the false pack-saddle to the southward of the island which had served to mislead us.

We were here visited by a canoe with six natives, two old women, two young men, and two children. The two women were paddling, and the fire was burning in the usual place. They approached the vessel, singing their rude song, "Hey meh leh," and continued it until they came alongside. The expression of the younger ones was extremely prepossessing, evincing much intelligence and good humour. They ate ham and bread voraciously, distending their large mouths, and showing a strong and beautiful set of teeth. A few strips of red flannel distributed among them produced great pleasure; they tied it around their heads as a sort of turban. Knowing they were fond of music, I had the fife played, the only instrument we could muster. They seemed much struck with the sound. The tune of Yankee Doodle they did not understand; but when "Bonnets of Blue" was played, they were all in motion keeping time to it. The vessel at this time was under way, and no presents could persuade them to continue any longer with us. There was some disposition in the younger ones, but the adults refused to be taken where the fickleness of their climate might subject them to be blown off. We found them also extremely imitative, repeating over our words and mimicking our motions. They were all quite naked.

I have seldom seen so happy a group. They were extremely lively and cheerful, and any thing but miserable, if we could have avoided contrasting their condition with our own.

The colour of the young men was a pale, and of the old a dark copper colour. Their heads were covered with ashes, but their exterior left a pleasing impression. Contentment was pictured in their countenances and actions, and produced a moral effect that will long be remembered.

On the 30th we reached Orange Harbour. While yet off the port, we made signal for the boats, and were soon joined by them, and learned with much pleasure that they were all well. The Sea-Gull had

returned safely. Lieutenant Craven having entertained some fears of the safety of the launch, which had been absent on a surveying excursion, had despatched that vessel in pursuit of her.

The Sea-Gull returned to Orange Harbour from the southern cruise on the 22d of March, having, after parting company, visited, as directed, Deception Island. On the morning after she left us (5th March,) Lieutenant Johnson gives the following account of the situation of the Sea-Gull: "The water was freezing about the decks, icicles, forming with the direction of the wind, enveloping every thing, shipping seas every five minutes, jib still hanging overboard, it was next to impossibility for us to make sail, and we should even have found difficulty in waring ship to avoid danger; our foresheets were of the size of a sloop of war's cable, from being so covered with ice; there was scarce a sheave that would traverse." After encountering thick and foggy weather, they reached Deception Island on the 10th of March, and anchored in Pendulum Cove.

The weather was extremely unfavourable during his stay of a week, being very boisterous. The plan of this bay by Lieutenant Kendall, of the Chanticleer, with which I furnished Lieutenant Johnson, was found accurate. On their landing, the bare ground that was seen, was a loose black earth. The beds of the ravines and the beaches were of a black and reddish gravel, much resembling pumice-stone in appearance. Penguins were seen in countless numbers, or, as he expresses it, "covered some hundreds of acres on the hill-side." It was then the moulting season, and they were seen busily occupied in picking off each other's feathers. It was an amusing sight to see them associated in pairs, thus employed, and the eagerness with which the sailors attacked them with the oars and boat-hooks. They were not inclined to submit quietly to this intrusion, and in some instances readily gave battle. Their manner in doing it was to seize the aggressor with their bill, and beat him with their flippers. Their bearing was quite courageous, and their retreat dignified, as far as their ridiculous waddle would permit. They were showy-looking birds, with yellow topknots, and are known as the Aptenodytes chrysocome.

As an accompaniment to these penguins, a small white pigeon, (Chironis or sheath-bill,) was found here, quite tame. These were easily taken in numbers. They are not web-footed, have red legs and bills, with perfectly white though not fine plumage. They seem to live entirely on the dung of the penguin, and their flesh is black, coarse, and unpalatable. Sailing up the bay, they descried a sea-leopard (the Phoca leopardina Jam), which Lieutenant Johnson succeeded in taking;

but by an unaccountable mistake, the skull, &c., were thrown overboard. Its dimensions were also omitted to be taken.

Knowing that Captain Foster, in the Chanticleer, had left here a self-registering thermometer, in 1829, I directed Lieutenant Johnson to look for it, and note its standing. Immediately on securing the tender he proceeded to search for it, but notwithstanding the particular directions, he did not find it. Since my return home, I have received a letter from William H. Smiley, master of a sealing vessel that touched there in February, 1842, stating that he had found the thermometer, and carefully noted its minimum temperature, which was 5° below zero.

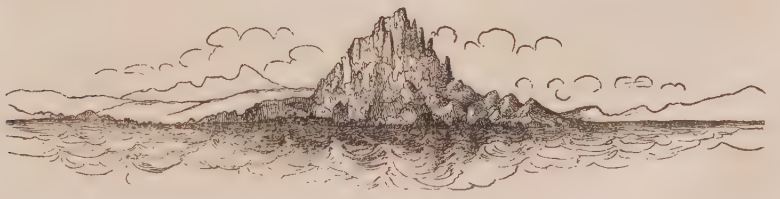
Lieutenant Johnson, in company with Assistant-Surgeon Whittle, visited an old crater, at the head of the bay, where a gentle ascent of about four hundred feet, brought them to the edge of an abrupt bank, some twenty feet high, surrounding the crater on the bay side. The crater was about fifteen hundred feet in diameter, from east to west, bounded on the west or farther side by lofty hills, with many ravines, which had apparently been much washed by heavy rains. This led to the belief that the water found within the crater would be fresh, but its taste, and the incrustation of salt found on its borders, showed that it was not so. Near the east end of the crater, the water boils in many places, sometimes bubbling out of the side of a bank, at others near the water's edge, with a hissing noise. The surface water was found to be on a level with the waters of the bay, and to be milk-warm. A few inches below, it was perceptibly colder. No thermometric observations were obtained. The ground near the Boiling Springs was quite hot. In the vicinity were lying quantities of cellular and scoriaceous lava. The only sign of vegetation was a lichen, growing in small tufts, around the mouth of several small craters, of three or four feet in diameter. From these a heated vapour is constantly issuing, accompanied by much noise. Before they returned to the tender, they were overtaken by a violent snow-storm from the northeast, and with difficulty reached the cove without the boat, having been compelled to leave it at the opposite side of the bay, for the force of the wind was such as to render all their efforts to pull against it useless. This weather continued with much snow for three days, when it ceased snowing, but still blew heavy. It was the intention of Lieutenant Johnson to carry over the yawl, for the purpose of sounding in the crater, to ascertain its depth, and get its temperature, which it is to be regretted was not done. On the 17th of March they sailed from Deception Island, having left a bottle enclosing reports, tied to a flagstaff. This was afterwards found by Captain Smiley, who mentions in

his letter to me, that in February, 1842, the whole south side of Deception Island appeared as if on fire. He counted thirteen volcanoes in action. He is of opinion that the island is undergoing many changes. He likewise reports that Palmer's Land consists of a number of islands, between which he has entered, and that the passages are deep, narrow, and dangerous.

The Sea-Gull, after a stormy passage, reached Orange Harbour on the 22d, with all hands much exhausted. She was despatched by Lieutenant Craven the next day, as before stated, in search of the launch, (which had been absent eleven days,) on the route she had been ordered to pursue.

In passing over from Hermit Island to that of Evout's, during a brisk gale and heavy sea, the launch, in towing, filled, broke adrift, and was lost. The men had all been previously ordered out of her, and most of the articles removed. The Sea-Gull again reached Orange Harbour on the 5th.

On her arrival, finding the launch had not completed the duties pointed out, I again despatched the Sea-Gull tender, to finish them, particularly to examine and survey a harbour on the east side of Wollaston's Island. She accordingly sailed the next day, and succeeded in performing the required duty, having surveyed a very safe and convenient harbour on the east side, and ascertained that the so-called Wollaston Island formed two islands. Leaving to the eastern-most the name of Wollaston, I have given to the western the name of Baily, after Francis Baily, Esq., the well-known Vice-President of the Royal Society, as a small memento of the obligation the Expedition and myself are under to him, for the great interest he took in the equipments, and the kindness shown me while in London when procuring the instruments. The harbour that lies between these two islands was named after the Sea-Gull. A chart of it will be found in the Hydrographical Atlas. Lieutenant Johnson was again transferred to the Vincennes. On the 12th, the Flying-Fish arrived, bringing news of the Peacock and their operations, which will be detailed in the following chapter.



CAPE HORN.

CHAPTER VIII.

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CHAPTER VIII.

SOUTHERN CRUISE—CONTINUED.

1839.

At 10 A. M., on the 25th of February, the Peacock, with the tender Flying-Fish, got under way, and also received parting cheers from the Vincennes and Relief as they passed out of the harbour. The wind, as with the Porpoise, was light and variable until the afternoon, when they likewise encountered the heavy squall from the southwest, which with the thick weather induced Captain Hudson to regain the outer anchorage of Orange Harbour, and remain there during the continuance of the gale. The next morning, the weather proving more favourable, they again got under way, and stood down the bay, with all sail set, and a fine breeze from the northward. Although they were passing rapidly through the water, when off Point Lort they found the flood tide so strong as to impede their progress. Indeed, such was its strength, that for a portion of the time they made little or no headway; and the tide being contrary to the wind, produced a cross and very unpleasant sea. By meridian, they had reached the island of Diego Ramieres.

The heavy bank of cumuli that had been perceived in the west, by noon began to develope itself, and by three o'clock they were under their storm-sails. The barometer, which was at 29·21 in., began to rise as it came on. This gale lasted twenty-four hours, and during its continuance the tender Flying-Fish was lost sight of. Captain Hudson in his instructions to Lieutenant Walker, notified him that the Peacock would wait twelve hours in or near the situation where last seen; which he now did; but no tidings being received of the tender, he bore away for their first rendezvous, having taken the precaution to fix four places of meeting.

During the last gale, from her bad and defective outfits, no vessel

could be more uncomfortable than the Peacock, and although every precaution was taken to make the ports tight, yet from their working, it was found impossible to keep them so.

After the gale, they found they had been set about three miles per hour to the southeast. Until the 3d of March, they had moderate weather. On the morning of the 4th of March, the barometer stood at 28·34 in. Shortly afterwards it began to rise, and a gale set in which blew heavily for several hours, when the weather again moderated, but the sea continued very high, and rendered the ship extremely wet. The wind varied from south-by-west to west-northwest.

On the 7th they again had squalls of snow and rain, with strong gales. On the 9th, although the weather had moderated, yet the sea was very heavy, and the ship tossed and tumbled about in every direction. William Stewart, captain of the main-top, was this day knocked off the yard, and in his fall struck the main rigging, but he canted and fell overboard, when he was seen to lie quite insensible, feet up, supported by his exploring boots, which were supposed to have occasioned his fall. A bowline was thrown over them, and he was dexterously drawn on board again. The ship had but little headway, and it would have been impossible to lower a boat on account of the roughness of the sea; his rescue was therefore almost miraculous. Every care was taken of him, but it was soon found that the violence of the concussion had been so great that his lungs had become gorged with blood, and little hopes were entertained of his recovery. After lingering to the 11th, he died. He was greatly regretted by both officers and men, for he had proved himself an excellent man, and was well calculated for the service. On the same day his body was committed to the deep, with the usual ceremonies.

This day they made the first iceberg. The only indication in the air or water on approaching it, was a fall of two degrees in the temperature of the former, and one degree in the latter. Their position was in latitude 64° S., and longitude 80° W.

On the 13th the weather proved fine and the sea smooth, affording an opportunity of making dip observations. These gave it 75°. The variation was 33·30° E. Their position was in latitude 64° 27′ S., longitude 84° W.

On the 14th, Captain Hudson remarked a great and striking change in the weather since they passed the 62° of south latitude, it having become much more settled, and free from the sudden squalls and constant gales they had experienced since leaving Cape Horn. Several birds were shot this day, including an albatross and many penguins. Petrels and Cape pigeons were seen. They now began to fall in with

icebergs in numbers. The temperature of the water and air had fallen to 33° and 32°.

On the 15th and 16th they had very many icebergs as their companions, mostly of fantastic shapes, much worn and broken,—disagreeable weather, with snow-squalls passing over. A continued twilight in the horizon and slight appearances of the aurora were seen, but no rays.

They encountered, during the 17th, and part of the 18th, the heaviest gale and sea they had experienced since leaving the United States. The thermometer in the air stood at 21° of Fahrenheit, and in the water at 28°. The ship was completely coated with ice, even to the gun-deck. Every spray thrown over her froze, and her bows and deck were fairly packed with it. The crew suffered much from the gun-deck being constantly wet; and it being now covered with ice, the ship was damp throughout.

On the 18th, the gale continued, with a heavy sea, the winds prevailing more from the south and south-southeast. There were many birds about the ship; among them a sheath-bill, which Mr. Peale made every exertion to take, but without success. A blue petrel was, however, caught. Several icebergs were in sight, and at night they had a beautiful display of the aurora australis, extending from south-southwest to east. The rays were of many colours, radiating towards the zenith, and reaching an altitude of 30°. Several brilliant meteors were also observed.

Hot coffee was now served to the crew at midnight, or at relieving of the watch, which proved exceedingly acceptable. The temperature of the air had fallen to 22°, and of the water to 28°.

On the 19th they had another display of the aurora, and it exhibited a peculiar effect. In the southern quarter there was an appearance of a dense cloud, resembling a shadow cast upon the sky, and forming an arch, about 10° in altitude. Above this were seen coruscations of light, rendering all objects around the ship visible. From behind this cloud, diverging rays frequently shot up to an altitude of from 25° to 45°. These appearances continued until day dawned. The night was remarkably fine, and many shooting stars were observed. The barometer stood at 29·77 in. During the afternoon of this day, a fog-bank was perceived in the southwestern quarter, and they were a short time afterwards completely enveloped in a fog so dense and thick, that they could not see twice the length of the ship. Fortunately, before it closed in, they were enabled to get good bearings of the different icebergs in sight, and particularly of those which closely surrounded them.

On the 20th, they had moderate weather, with fogs. They had now reached the longitude of 90° W., latitude 68° S., and obtained a sight of the icy barrier. The fog becoming dense, they were obliged to heave the ship to; the sea being smooth, they took the opportunity to sound with the deep-sea line, with the apparatus for temperature. The line being of copper wire, they succeeded in getting out eight hundred fathoms of it; but when they began to reel it up, it parted, and the whole was lost. The noise of the sea beating on the icebergs was frequently heard close aboard, and several loud sounds resembling thunder, which they imputed to the breaking asunder and turning over of large icebergs.

The dip was also tried, and was made 78°; the variation was found to be 33° easterly. On the fog lifting, they found themselves in near proximity to icebergs and field-ice. Some few petrels were seen about the ship, of a different species from any heretofore observed by us. All trials to obtain one proved unsuccessful.

During the whole of the 21st they could not venture to run, in consequence of the dense fog, which lasted all day, with the exception of about an hour. Mr. Peale having shot one of the petrels, of the same kind as seen the day before, a boat was lowered to pick it up, of which advantage was taken to try the current. It was found setting one-third of a mile per hour to the northwest-by-west.

The 22d also proved foggy. At daylight the fog lifted for a few moments, and they discovered the icy barrier extending from north-east-by-north to southeast-by-east. At about 9 A. M. the fog again lifted, when they discovered icebergs all around them, rendering their position extremely dangerous. Every endeavour was made to effect their escape as soon as possible. Besides petrels, Cape pigeons, &c., a flock of tern was seen.

The wind continuing from the northward and westward, they wore ship to the northward. In the latter part of the day, considering their situation in the vicinity of so many icebergs too dangerous to be held under such circumstances, they therefore made sail, and ran off to seek a more open sea. Many whales were seen and heard during the last few days.

On the 23d it partly cleared, and the fog having been succeeded by a snow-storm, the wind hauled to the west, with a heavy bank of clouds in that quarter. The barometer showed no indication of a gale; the weather turned out thick, and prevented them from seeing any distance. They had some severe squalls, accompanied with snow. On the 24th, the wind hauling to the northward and westward, brought snow and thick weather, with some heavy squalls. Many icebergs

were met with, which were fortunately avoided. A sharp look-out was kept for them, and the ship put in readiness to perform any manœuvre that might be desirable. Some of the icebergs were two hundred feet above the surface of the water, and of a pinnacle shape. The snow continued to fall fast, rendering the ship uncomfortably wet.

On the 25th, the fog continued until near meridian. Many birds were seen about the ship, and many fin-back whales. They obtained a meridian observation, the first for the last six days, and found themselves in the latitude of 68° S., longitude 97° 58′ W. Here, in the evening, to their great joy, they fell in with the tender Flying-Fish. On her near approach, all hands were turned up, and gave her three hearty cheers. Lieutenant Walker came on board, and reported to Captain Hudson as follows.

That he had visited all the appointed rendezvous in hopes of falling in with the Peacock, but without success, having encountered very severe and boisterous weather. On the 18th they left the fourth rendezvous, having passed the 17th in its vicinity. They then turned towards the south for Cook's Ne Plus Ultra, and continued their way to the southward. The weather was at times very thick, the ice islands became numerous, and they occasionally passed a little floating ice. On the 18th the ice became abundant, and floated in large masses around them. At 4 A. M. the water was much discoloured, and some of the ice also having the appearance of being but lately detached from the land. They obtained a cast of the lead, but found no bottom at one hundred fathoms. At eight o'clock the fog lifted, and discovered, to the amazement of all, a wall of ice from fifteen to twenty feet high, extending east and west as far as the eye could reach, and spreading out into a vast and seemingly boundless field to the south. This wall was formed of masses of all sizes, and various shapes and colours. Their latitude at this time was about 67° 30′ S., longitude 105° W. The weather becoming thick, they stood to the northward, and soon ran into blue water.

On the 21st, at 7 A. M., they saw the ice extending in broken ranges from south-by-east to northeast, and the sea extending round to the westward. At eight o'clock, the water was again much discoloured, and many large icebergs were around. At meridian, their latitude was 68° 41′ S., longitude 103° 34′ W., when they again stood to the southward, running among the ice-islands with a fair wind, flattering themselves that they should before noon of the next day get further south than Cook had. But their hopes were soon blasted; for the weather became thick, and they were in consequence obliged to heave-to. The wind soon freshened to a gale, accompanied by a heavy sea.

March 22d, from midnight to four o'clock, a fresh gale, with rain. The weather lighting up at intervals, made them aware that they were in the midst of innumerable ice-islands, so closely packed as scarcely to afford a passage between them. At four, the wind still continuing fresh and the weather misty, they stood to the northward and eastward. The weather grew thicker and became colder. Shortly after the fog lifted, and they found themselves surrounded by narrow fields of ice, with contracted passages between them, extending in a direction perpendicular to that of the wind. As far as the eye could reach were icebergs, packed and floating, in all directions. After a short examination, some places appeared where the ice was not so compact. At one of these, they succeeded in passing through. Fresh gales and thick weather followed, and they still passed numbers of icebergs, of from eighty to one hundred feet in height, with the sea breaking on them.

On the morning of the 23d, their latitude was 70° S., longitude 100° 16′ W. The weather proved clear. In the afternoon they again stood to the southward and eastward for three hours, when they observed the appearance of land, and discovered large masses of ice and numerous icebergs. At midnight the southern horizon was beautifully illuminated with the aurora australis.

On the 24th of March, they had a heavy fall of snow; passed many icebergs, and large quantities of floating ice; got suddenly into large fields of packed and broken ice, extending as far as the eye could reach, in all directions, which, with the accumulation of snow, appeared to be rapidly becoming solid. They lost no time in forcing their way out. All on board were of opinion, that within a short time after they cleared it, it became a firm field of ice. The latitude observed was 69° 06′ S., longitude 96° 50′ W.

Having on two occasions narrowly escaped being closed in by the ice, Lieutenant Walker had determined to return, and was making his way to the north when he fell in with the Peacock.

The nights having become long, with the interruptions occasioned by fogs and snow-storms, afforded but little time for running the vessels among the icebergs, whose numbers rendered the navigation extremely hazardous. The condition of the Peacock for a winter's campaign, was miserable, and on board the Flying-Fish there was no protection in the event of being frozen in. The positive nature of his instructions, combined with the report of Lieutenant Walker, convinced Captain Hudson of the necessity of turning the vessels' heads towards a more temperate climate. On holding a council with his officers, he found them all of the opinion that the season for active operations in

these latitudes had passed, and that it was advisable for the vessels to proceed without delay to the north.

He remarks in his report (which, together with Lieutenant Walker's, will be found in Appendix XXXI.), "That it required more moral courage than I can well describe, to bring my mind to this decision, for we had at that moment less ice about us than at any time since we had entered among it; but I felt satisfied, taking all things into consideration, that nothing more could be done at this late season, and that it would be recklessly hazarding the lives of those entrusted to my care, jeoparding the vessels, and of great detriment to the future operations of the Expedition, which an honest conviction of the duty I owed my country, most decidedly forbade." The vessels accordingly steered to the northward.

The weather, during the cruise south, was exceedingly unfavourable; for, with few exceptions, during their stay in the Antarctic Circle, they were enveloped in dense fogs, or found only occasional relief from them in falls of snow. The crew during the whole time enjoyed an unusual degree of health, which is not a little surprising; for, since leaving Orange Harbour, the state of the ship had been such as to promote disease. The precautions and endeavours to keep the men dry, entirely failed, from the condition of the ship, heretofore referred to.

On the night of the 26th, they had again a slight display of the aurora, its radiations extending 30° in altitude. Fresh gales blew from the northwest, with a heavy sea, so that the tender found difficulty in keeping company, and they reduced sail in order to avoid parting with her.

The fresh gales continued on the 27th, accompanied with rain. Towards night it cleared a little, and, with the aid of the young moon, they were enabled to run through the ice.

The weather proved thick on the 28th and 29th, and they had little opportunity of making progress to the north, against the northwest winds, which were light. On this night a new danger beset them, that of being consumed by fire! At midnight, on the 29th of March, they were aroused by the smell of burning and smoke, issuing from the main hold. The usual orders were given relative to the magazine. The drum beat to quarters. On opening the main hatch, smoke issued out in volumes, and fire was discovered under it, proceeding from a bag in full blaze. This was soon passed on deck, and the fire extinguished. It was fortunately discovered in time, and was found to proceed from a quantity of coffee, which had been put below, in the bag, after it had been burnt or roasted, the previous afternoon.

On the 1st of April, in latitude 60° 12′ S., longitude 84° 20′ W., Captain Hudson despatched the tender to Orange Harbour, with his reports to me, and continued his route to Valparaiso. The last icebergs seen were in latitude 62° 30′ S., longitude 87° 41′ W.; the temperature of air 33°; of water 35°.

Captain Hudson speaks in the highest terms of his officers and crew, of their promptness and efficiency in the performance of their respective duties, and of their cordial co-operation in carrying out his views.

They experienced a gale of wind on the 6th and 7th of April, in which the barometer fell to 28·71 inches. Some of the squalls were remarkably heavy, and the sea high and topping. The gale began at northwest, varying to the eastward, and suddenly changed to west-southwest; latitude 52° 47′ S., longitude 84° W.

On the 9th, Royal Hope, ordinary seaman, fell from aloft, but did not experience any injury. In latitude 51° S., longitude 82° W., the sea again showed signs of phosphorescence: the temperature of the water was 46°.

On the 11th, they had reached the latitude of 47° 30′ S., longitude 80° W., and the weather began to moderate, having passed the stormy latitudes of from 50° to 60° S., where the heaviest winds and seas are met with.

The wind, on the 13th of April, in the latitude of 40° S., began to draw to the eastward, and gradually passed into the trade-wind. The 15th of April was the first fair day they had had since the 25th of February.

On the 16th of April, they had much phosphorescence, appearing as it were in sheets of liquid fire: the temperature of the water 58°; latitude 36° S., longitude 75° W.

On the 17th, they spoke the whale-ship Francis, and afforded her medical assistance. Until the 20th, they had very light airs, inclining to calms. On the evening of the 19th, they made the land of Chili; and on the 21st the Peacock arrived in Valparaiso, where to their surprise they found our store-ship the Relief, which had arrived at Valparaiso some days previous.

The Relief left Orange Harbour on the 26th of February, (a copy of her instructions will be found in Appendix XXX.,) for the purpose of visiting various places in the Straits of Magellan, to afford an opportunity of making investigations, and opening a larger field for our naturalists during the fifty or sixty days they were to be detained on the coast. Most of the scientific gentlemen were accordingly transferred to her; and she was ordered to enter the Brecknock Passage, and thence into Cockburn Sound, of which we had King's valuable

chart; and I thought that the passage into the strait was more feasible, and might be sooner accomplished by that route than by taking the eastern passage, particularly as the wind was favourable. I also thought it would enable them to explore more parts of the straits, and those which had been least visited.

Various difficulties prevented her reaching the entrance to the Brecknock Passage, principally that of keeping too far off the coast on long tacks to the southward.

On the 17th of March, after being at sea twenty days, they approached the coast, and a gale ensuing from the southwest, Lieutenant-Commandant Long, on the following day, determined to run in and anchor under Noir Island, which is spoken of by King as an excellent harbour. The wind was blowing a gale from the southwest, with thick weather and hail-squalls. Noir Island was discovered under the lee, judged to be about twelve miles distant, when they steered for it. It becoming thick, they did not discover the Tower Rocks until they were almost up with, and just had time to clear them. These rocks presented a magnificent and fearful sight, the sea breaking completely over them. Three anchors were prepared. They rounded the south-east point of the island, and stood in for the bay. At about five o'clock they anchored in seventeen fathoms, and the anchor took effect.

On the morning of the 19th, the highest point of Noir Island was seen, capped with snow; the wind had abated somewhat, but not enough to permit of their landing in a snug little cove abreast of them. In the afternoon the wind again increased, and another anchor was let go. There was much sea, and the ship rode very uneasy at her anchor. The sea broke tremendously on the reef astern, shooting up in columns, such as are seen to appear under the effect of mirage. After it became dark, the wind shifted to the southward and eastward, which brought the sea from that quarter, and exposed them more both to it and the wind. The anchors shortly after began to drag, and the vessel was urged in the direction of a rock. Fortunately the wind abated towards morning, and came from its old quarter, southwest, more off the land, but still blew with violence.

On the morning of the 20th, one of their chain cables was found to have parted. The chain was hove in with some difficulty, and another anchor let go. The weather towards evening became again threatening, and produced no little anxiety. At nightfall it shifted in the same way it had done the previous evening, blowing again heavily. The ship was felt to be constantly dragging, accompanied by that grating kind of noise of the chain moving on the bottom, which is any thing but agreeable. The rock astern, together with the reef toward which

the wind and sea were both setting the ship, rendered their situation truly appalling. The prospect of any one surviving, in case they had struck, was extremely slight. The night was dark and stormy, and the dragging continued occasionally until midnight, when they found they had passed and escaped the rock, and were near the reef. They now shipped a heavy sea over the bows, the shock of which was so great that it parted their cables, and their drifting became rapid. From the set of the current, they just cleared the reef. When the point of the island bore east of south, they slipped their cables, wore round, and made sail; and on the 21st, at daybreak, they found themselves off Cape Gloucester.

The conduct of Lieutenant-Commandant Long, his officers and men, during the perilous situation in which the Relief was placed, deserves great praise; they did their duty in every respect. On getting to sea, Lieutenant-Commandant Long, with a council of officers, opened his sealed instructions, which directed him to proceed to Valparaiso, in the event of not finding me on his return to Orange Harbour; and concluded to make for Valparaiso, off which port he arrived on the 13th of April, without anchors, which soon became known to Commandant Locke, of her Britannic Majesty's ship Fly. He, in the most prompt and handsome manner, despatched a boat with an anchor to the assistance of the Relief; and it affords me great pleasure to acknowledge the obligation we feel for this opportune service. The next day the Relief anchored in the bay of Valparaiso.

But to return to Orange Harbour.

The Flying-Fish arrived on the 11th April. The duties of the observatory having been completed, the instruments were embarked, and every thing made ready for our departure. During the Vincennes' stay here of sixty days, we found the weather exceedingly changeable. The winds prevailed forty-seven days from the westward, twelve days from the north and eastward, and one from the southeast. The mean temperature was 44·36°; maximum, 56°, minimum, 32°. During this time there were eleven gales of wind, of from two to three days' duration.

The mean range of the barometer was 29·801 in.; its movement in predicting the weather, was directly opposite to that observed in other latitudes, the gales always commencing when the barometer began to rise, fine weather generally continuing until it reached its minimum, 29·109 in., to which it sinks in from twenty-four to thirty-six hours, and where it remained stationary for a few hours, during all which time the weather continued good. As the barometer begins to rise, the gales come on, and continue until the mercury again reaches nearly its maximum point, 30·244 in.

There were but few days on which rain did not fall during some portion of the twenty-four hours, but seldom heavily; lightning and thunder occurred once during the time. The climate may be called extremely boisterous, although from the fact of the natives being without any kind of covering, one would suppose it cannot be very variable as to temperature, throughout the year. The want of clothing is not, however, peculiar to all the natives; those seen at Good Success Bay were well covered with guanacoe-skins, and are a finer-looking and taller race of men.

Observations of any kind are difficult to be had at Orange Harbour, either by day or night.

While Lieutenant Carr and his party were at the observatory, a wolf was seen, at which Midshipman Clark fired, but supposed he was not shot. The next morning he was found dead at a short distance from the place. He appeared very ferocious and fearless. Mr. Drayton made a correct drawing of him, and a number of measurements were taken. The hair was long over the whole body, and that about the neck and shoulders stood erect. It was a male, weighed fifteen pounds and three quarters, and measured, from nose to tip of tail, three feet six and three-fourths inches, and stood sixteen inches and a half high; colour of back, top of head and tail, gray, the latter with a tuft of black at its end; sides of head and outside of legs reddish brown; white between the legs and on the belly. Dr. Fox some days afterwards shot a female near the same place; she had attacked one of the men, and seized his pea-jacket.

The wolf is the only land animal that is a native of the soil, and is supposed the same as that described by Captain King. The natives have many dogs.

Of land birds, we found the upland goose, a most beautiful eagle, a few plover, and some small birds. There are great quantities of wild fowl, geese, ducks, and the usual sea birds, to be seen at all times in the harbour, where they find abundance of food among the kelp.

A number of burnt human bones were dug up in a cave; but whether the natives burn their dead or not, we had no opportunity of ascertaining.

Orange Harbour is an excellent place to obtain wood and water. The latter is easily procured and of good quality. Winter-bark may be obtained here in large quantities; scurvy-grass and wild celery are also plentiful around the shores; and fish are in abundance.

As a resort for vessels in distress or affected with scurvy, &c. &c., this port may be recommended; and it is the only one on this coast that offers a safe and convenient harbour to supply their wants.

On the 17th April, the time having expired for the return of the Relief, I concluded to leave Orange Harbour with the Vincennes and Porpoise. Believing the Relief had been detained, the Flying-Fish and Sea-Gull tenders were both left to await her arrival, for ten days, to take the scientific gentlemen on board, and join us at Valparaiso, in order to prevent detention by the slow sailing of that ship.

We got under way; but the wind drawing ahead, with appearances of bad weather, we anchored in Scapenham Bay. The weather becoming stormy, and thinking the place in which we were anchored too much exposed, we again got under way, ran back, and anchored in Orange Bay.

Before leaving these desolate and stormy regions, it may be expected that I should say a few words relative to the passage round the Cape. There are so many opinions relative to the best manner of proceeding in this navigation, that one in consulting them derives but little satisfaction, no two authorities agreeing in their views upon the subject. I am inclined to believe that as much depends upon the vessel, and the manner in which she is navigated, as the route pursued, whether the Cape is passed close to, or given a good berth: the object of all is to pass it as quickly as possible, and taking into consideration the difficulties to be incurred from boisterous weather, heavy seas, and ice, it is impossible to lay down any precise rule: that course which appears most feasible at the time ought to be adopted, keeping, however, in view, that there is no danger to be apprehended in navigating on the western coast of Terra del Fuego, as the current sets along its coast, and it is perfectly safe and practicable to navigate it as far as Cape Pillar. The great difficulty exists in passing the pitch of the Cape; there is none afterwards in getting to the westward. On the coast, the wind seldom blows long from the same quarter, but veers from southwest to northwest: the gales generally begin at the former quarter and end at the latter. Previous to the southwest gales, it would, therefore, in all cases, be advisable, when indications of their occurrence are visible, (which are known by the banks of cumuli in that quarter, some twenty-four hours previously,) to stand to the southward and westward in preference, with as much sail as well can be carried, that when the change occurs, you may be ready to stand on the other tack to the northward. One thing every navigator ought to bear in mind, that it requires all the activity and perseverance he may be possessed of, to accomplish it quickly.

On the 20th we took our final leave of these waters, and on the 21st lost sight of land, passing to the northward of the island of Diego Ramieres.

On the 23d, during a strong gale, we parted company with the Porpoise. On the 28th, found ourselves in longitude 78° 30′ W., latitude 56° 30′ S., when I kept away to the northward, it blowing violently from the southward and westward, with a heavy sea.

On the 30th, we had reached the latitude of 43° S., longitude 76° W., when the wind came out from the northward. It being a mild day, we caught with a small hook, several fine albatrosses, ten feet six inches from wing to wing. They were preserved as specimens.

Immediately after leaving Orange Harbour, dysentery made its appearance on board the Vincennes, and ran through the whole ship's company. Some of the officers were also affected. It proved of a very mild type, and readily yielded to medical treatment. Upon our arrival at Valparaiso, it had entirely disappeared. The medical officers were unable to account for it, the health of the ship's company having been very good during our stay at Orange Harbour. It was not thought to be owing to the water, as they had been using it for two months without any bad effect, but I think must be imputed to the cold and wet we experienced in the first part of the passage.

On the 10th, we made the island of Mocha. The northerly wind continued until the 11th of May, when we had a gale for several hours. The barometer indicated this gale by a fall of .300 in. This gale seemed to break up our adverse winds, and we were shortly afterwards enabled to lay our course. This was the first fair wind for nine days, the head winds having continued from the 2d till the 11th instant.

On the 13th, in latitude 36° S., we took the trade-winds, Cape pigeons, and albatrosses still continuing with us.

On the 15th we made the land off Valparaiso, and before noon anchored in the bay, where we found the Peacock, and received tidings that the Relief had sailed with the store-ship Mariposa for Callao. The Porpoise arrived on the 16th, and the Flying-Fish reached Valparaiso on the 19th, after having experienced extremely boisterous weather.

RELIEF AT NOIR ISLAND.

CHAPTER IX.

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CHAPTER IX.

CHILI.

1839.

On approaching the coast of Chili, every one is anxious to get a sight of the Cordilleras. There are only two periods during the day in which they can be seen to advantage, viz.: in the morning before sunrise, and in the evening at sunset. The first is the most striking view. The outline is at that time of a golden hue, and may be easily traced, in a long line, running north and south. This gradually brightens, and is lost the moment the sun is seen.

The evening view gives rise to disappointment. The mountains are seen at a great distance (eighty miles in a bird's flight) reflecting the setting sun, and, in consequence, appear much lower than is anticipated.

On our arrival at Valparaiso, I lost no time in establishing the observatory. The officers and scientific gentlemen were assigned to such duties as were deemed most desirable to insure the results in the different departments.

The authorities, whom I at once called upon in company with our consul, were exceedingly kind and attentive, and gave every offer of assistance.

The officers of the customs readily gave me permission to land all my instruments. Mr. Cood, an English gentleman, kindly offered our consul to place at my disposition an unoccupied house on the hill. Although it was some distance to mount up, as it was quiet and out of the way, I accepted the kind offer, and occupied it.

As I was desirous of avoiding all unnecessary delay, not only on account of the loss of time we had already met with, but because the season was approaching when the *northers* might be expected, every exertion was made to supply our wants, and through the kindness and attention of our consul, G. G. Hobson, Esq., this was effected in the

shortest possible time. The northers are greatly dreaded, although I think without much cause. One of them, and the last of any force, I had myself experienced in June, 1822, (whilst in command of a merchant vessel.) In it eighteen sail of vessels were lost. But since that time vessels are much better provided with cables and anchors, and what proved a disastrous storm then, would now scarcely be felt. I do not deem the bay so dangerous as it has the name of being. The great difficulty of the port is its confined space, and in the event of a gale, the sea that sets in is so heavy, that vessels are liable to come in contact with each other, and to be more or less injured. The port is too limited in extent to accommodate the trade that is carried on in it. Various schemes and improvements are talked of, but none that are feasible. The depth of water opposes an almost insuperable obstacle to its improvement by piers. The enterprise of the government, and of the inhabitants of Valparaiso, is, I am well satisfied, equal to any undertaking that is practicable.

From the best accounts, I am satisfied that the harbour is filling up. from the wash off the hills. Although this may seem but a small amount of deposition, yet after a lapse of sixteen years, the change was quite perceptible to me, and the oldest residents confirmed the fact. The anchorage of the vessels has changed, and what before was thought an extremely dangerous situation, is now considered the best in the event of bad weather. The sea is to be feared rather than the wind, for the latter seldom blows home, because the land immediately behind the city rises in abrupt hills, to the height of from eight to fifteen hundred and two thousand feet.

Valparaiso has greatly increased in size and consequence within the last few years, and has become the great seaport of Chili, and, indeed, of the whole coast. Although it labours under many disadvantages as respects its harbour, which is inferior to others on the coast, yet it is the nearest and most convenient port to Santiago, the capital.

I have had some opportunity of knowing Valparaiso, and contrasting its present state with that of 1821 and 1822. It was then a mere village, composed, with but few exceptions, of straggling ranchos. It has now the appearance of a thickly-settled town, with a population of thirty thousand, five times the number it had then. It is divided into two parts, one of which is known by the name of the Port, and is the old town; the other by that of the Almendral, occupying a level plain to the east. Its location is by no means such as to show it to advantage. The principal buildings are the custom-house, two churches, and the houses occupying the main street. Most of the buildings are of one story, and are built of adobes or sun-dried brick.

The walls of the buildings are from four to six feet thick. The reason for this mode of building is the frequent occurrence of earthquakes. The streets are well paved. The Plaza has not much to recommend it. The Government House is an inferior building. Great improvements are now making, and many buildings putting up.

They are about bringing water from one of the neighbouring springs on the hill, which, if the supply is sufficient, will give the town many comforts. On the hills are many neat and comfortable dwellings, surrounded by flower-gardens. These are chiefly occupied by the families of American and English merchants. This is the most pleasant part of the town, and enjoys a beautiful view of the harbour. The ascent to it is made quite easy by a well-constructed road through a ravine. The height is two hundred and ten feet above the sea. The east end of the Almendral is also occupied by the wealthy citizens. The lower classes live in the ravines. Many of their habitations are scarcely sufficient to keep them dry during the rainy season. They are built of reeds, plastered with mud, and thatched with straw. They seldom contain more than one apartment.

The well-known hills to the south of the port, called the "Main and Fore Top," are the principal localities of the grog-shops and their customers. These two hills, and the gorge (*quebrada*) between them, seem to contain a large proportion of the worthless population of both sexes. The females, remarkable for their black eyes and red "bayettas," are an annoyance to the authorities, the trade, and commanders of vessels, and equally so to the poor sailors, who seldom leave this port without empty pockets and injured health.

It was difficult to realize the improvement and change that had taken place in the habits of the people, and the advancement in civil order and civilization. On my former visit, there was no sort of order, regulation, or good government. Robbery, murder, and vices of all kinds, were openly committed. The exercise of arbitrary military power alone existed. Not only with the natives, but among foreigners, gambling and knavery of the lowest order, and all the demoralizing effects that accompany them, prevailed. Every body engaged in trade was found more or less to recognise the system of fraud and deceit that had become the order of the day. The demoralizing influence of smuggling, and bribery in open day, without disguise, with the knowledge and connivance of the higher authorities, whose duty it was to apply the corrective, naturally brought about this state of things; and the inference was drawn, true or false, that they participated in the profits accruing from such transactions.

I myself saw on my former visit several dead bodies exposed in the

public squares, victims of the *cuchillo.* This was the result of a night's debauch, and the fracas attendant upon it. No other punishment awaited the culprits than the remorse of their own conscience.

Now, Valparaiso, and indeed all Chili, shows a great change for the better; order reigns throughout; crime is rarely heard of, and never goes unpunished; good order and decorum prevail outwardly every where; that engine of good government, an active and efficient police, has been established. It is admirably regulated, and brought fully into action, not only for the protection of life and property, but in adding to the comforts of the inhabitants.

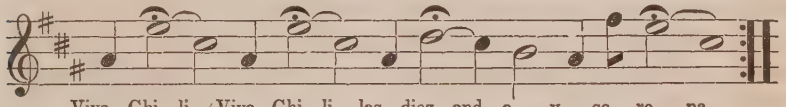
There is no country that more strongly bears the impress of the working of a master spirit, in conjunction with a desire on the part of the people to maintain order by good government, than Chili.

The civil power has now complete ascendency over the military, which had so long ruled Chili with despotic sway. The breaking down of the latter was the first step to the establishment of good order, and removed the spirit of disorganization that a military ascendency was for ever producing. Revolution had become another word in the army for promotion, for with it, every officer usually obtained a grade. Each officer was ever ready to seek self-aggrandizement, whenever he could create a party in his favour; and no opportunity was lost in bringing about dissatisfaction at the mode in which the existing government conducted affairs.

The predominant trait of the Chilians, when compared with other South Americans, is their love of country and attachment to their homes. This feeling is common to all classes. There is also a great feeling of independence and equality. Public opinion has weight in directing the affairs of state. The people are fond of agricultural pursuits, and the lower orders much better disposed towards foreigners than in other parts. Schools and colleges have been established, and a desire to extend the benefits of education throughout the population is evinced. This has been of late one of the constant aims of government.

The credit of forming this police is given to Portales. It consists of two distinct bodies, one mounted, the other on foot. The watchmen carry swords only. The former patrol the streets on horseback, while the latter take their particular walk round a square or two, for which they are responsible. A message may be sent through them to the farthest end of the city, and an answer returned, in fifteen minutes. They carry a loud and shrill whistle, the sounds of which are varied as occasion requires, and by it a concentration of force can be effected in a few moments. The notes of the whistle when all is well, are

When they cry the hour they all sing the same tune, but the pitch is ranged in accordance with the scope of the voice. The manner of singing the hour is pleasing, thus:



In the morning they add to it a prayer, as *Ave Maria purissima las cinco y media.* The music does not differ from the night-song, but has the few additional notes that are necessary.

This police adds greatly to the comfort as well as to the safety of the inhabitants. To give an instance of its effects, apothecaries are chosen weekly to keep their shops open all night, and in case of sickness or requiring any aid, one has only to call for the *vigilante*, who takes the recipe and passes it to the next, and so on to the shop, where it is obtained, and returned as soon as possible, without any trouble whatever. They have their particular rounds, and each door is obliged to have a padlock. If any door is found without it, they put a lock on, for which the owner has to pay a fine of four dollars to the city to have it removed; half is the reward of the vigilante.

A complaint during our stay was made by one of the officers, of exactions made by a policeman. It was instantly taken notice of, and punished. It is to be regretted that this police should still wear the military uniform, as it seems unbecoming in a republican form of government; at least we thought so.

The shops are well filled with almost all articles of English, American and French manufacture. The markets are well supplied. There are no market-gardens in the neighbourhood of Valparaiso, and nearly all the vegetables are brought from the valley of Quillota, about sixteen miles distant, on the backs of mules, in panniers. The mode of bringing grass or clover to market is peculiar: it sometimes almost covers both horse and rider. The supplies are abundant and of excellent quality, consisting of all kinds of fruits and vegetables, &c. The prices vary but little from those at home; beef, for instance, costs six and a half cents per pound.

There are but few amusements. Among them is a theatre, which is small and inconvenient, and the *chingano*, both of which are usually open on a Sunday evening.

The Chilians are extremely fond of the dance called the samacueca.

This may be called the national dance, and is in vogue among the common people. It is usually performed at the chingano, which is a kind of amphitheatre, surrounded by apartments where refreshments, including strong drinks, are sold, and is generally well filled by both sexes. The dance is performed on a kind of stage, under an open shed. The music is a mixture of Spanish and Indian, and is performed altogether by females, on an old-fashioned long and narrow harp, one end of which rests on the lap of the performer, and the other on the stage, ten feet off. A second girl is seen merrily beating time on the sounding-board of the instrument. On the right is another, strumming the common chords on a wire-string guitar or kitty, making, at every vibration of the right hand, a full sweep across all the strings, and varying the chords. In addition to this, they sang a national love-song, in Spanish, at the top of their voices, one singing a kind of alto; the whole producing a very strange combination of sounds.

The dance is performed by a young man and woman; the former is gaudily decked in a light scarlet jacket, embroidered with gold lace, white pantaloons, red sash and pumps, with a tiny red cap; whilst that of his partner consists of a gaudy painted muslin dress, quite short and stiffly starched, not a little aided by an ample pair of hips; thrown over all is a rich-coloured French shawl; these, with well-fitted silk stockings, complete her attire. These last are in truth characteristic of the Chilian women of all classes, and they take no pains to conceal them. One not unfrequently sees the extravagance of silk stockings in the washerwomen at their tubs, and even with their hands in the suds. The dress in general fits neatly, and nature is not distorted by tight lacing, or the wearing of corsets. Nothing is worn on the head, and the hair, parted and equally divided from the forehead back to the neck, hangs down in two long plaits on each shoulder to the waist.

The style of dancing is somewhat like a fandango. The couple begin by facing each other and flirting handkerchiefs over each other's heads, then approaching, slowly retreating again, then quickly shooting off to one side, passing under arms without touching, with great agility, rattling and beating time with castanets. Their movements are quite graceful, those of their feet pretty, and withal quite amorous; the gestures may be readily understood, not only by the native audience, but by foreigners. I cannot say much for its moral tendency.

The higher classes of females have the name of being virtuous and estimable in their domestic circle, but we cannot say that they are beautiful. They dress their hair with great care and taste. Their feet are small, and they have a graceful carriage.

The French fashion of dress prevails, and they are just beginning to wear bonnets. The advancement of civilization is rapid; the imitation of foreign habits and customs will soon predominate over those of Chili; and what is of more consequence, some attention is being paid to their education.

A rather singular occurrence took place at a review of the militia on the Plaiancia, one Sunday, by the President, who was attended by his daughter, and a number of the most respectable ladies of the place. They marched down the line, and afterwards danced with the officers on the field, in the presence of the soldiers. All the South Americans are inveterate dancers, the Chilians taking the lead. The taste for music is general, but although they have a number of national airs, few have been printed. All the printed music in common use is foreign, as are the instruments. Pianos are to be seen in almost every house.

The natives have a fondness for flowers, although they are but little cultivated. Few gardens are yet to be seen of any consequence. They require constant irrigation the most of the year, which may account for this want. There are two in the Almendral, surrounded by high walls, and kept in tolerable order; and great attention is paid in these to foreign plants.

We happened to be at Valparaiso during the President's visit, which, connected with the late victory and successes in Peru, caused much rejoicing; every possible attention was shown to the Chief Magistrate, by both natives and foreigners. Among others, he was taken on an aquatic excursion, on board of a small brigantine, decked out with the flags of all nations, and was accompanied by the civil authorities of Valparaiso, the English admiral, and others. On passing the men-of-war, he received the customary salutes from all but ourselves. We could not fire the guns on account of our chronometers. On his passing, however, the rigging was manned, and we gave him several hearty cheers, which, it was said, much delighted the President and his suite, from the novelty of the compliment.

Three balls were given during the stay of the squadron here, in consequence of the visit of the President (General Prieto); one in honour of the recent victory of Yungai over the Peruvians; the others by the citizens and foreigners to his Excellency. As the former was an extraordinary occasion, a description of it will give some insight into the manner in which they conduct these affairs in Chili. All three were managed in a manner that would have been highly creditable in any part of the world.

The place selected for the great ball was between the walls of two

large unfinished storehouses, a space of one hundred and fifty feet long by ninety wide, over which temporary arches were built, the whole covered with an awning lined with blue, and studded with stars, from which were suspended some twenty very handsome chandeliers. The whole was carpeted, and the various pillars which supported the roof were decorated with emblems of the victory and nation. At the end opposite to the entrance was a transparency of General Bulnes, the hero of Yungai, surrounded with scrolls of his deeds. Along the corridors which the piazzas formed, ranges of sofas and seats were placed; on the walls were hung rich mirrors and paintings: the former rested on massive pier-tables, in which hundreds of lights were seen reflected, whilst the graceful festoons of the national flags and pennants formed into draperies, intermixed with wreaths of flowers and evergreens in endless variety, encircling emblematic designs of the nation's glory, produced an effect not easily surpassed. The reception-room of the President was hung with scarlet tapestry, decorated with paintings, mirrors, and pier-tables, and brilliantly lighted with chandeliers, &c.

There were likewise card-rooms, smoking-rooms, supper-rooms, and a dressing-room for the ladies, in which were a number of hair-dressers and mantua-makers constantly in attendance. The whole was well got up, unique, and truly splendid; all Valparaiso had sent furniture of every kind, and even the churches had contributed to assist in the great gala fête in commemoration of the national victory.

The company consisted of about five hundred, one-third of whom were females. Many costly uniforms, of various patterns, and not a little fanciful, added to the brilliancy of the scene.

About ten o'clock, the ball was opened by the President, Don Joaquim Prieto, in person, a novel sight to us. He was dressed in a richly embroidered coat, gold epaulettes, and field-marshal's sash. He danced a minuet with a lady of Valparaiso, whom he had especially selected, after which the dancing became general, consisting of quadrilles, country-dances, and waltzes, besides which they had the lascivious dances of samacueca, cachuca, and lordean. These partake somewhat of the bolero and fandango, or Spanish and African dance.

By way of interlude, marches and national airs were played and sung. The ball did not break up until eight o'clock next morning, at which hour the President and his daughter were escorted home by a procession of the dancers, with the music playing national airs, forming rather a grotesque show to the bystanders, from the interchange of hats and outer garments that had taken place.

On reaching General Prieto's quarters, they sang a national hymn,

after which many were invited in, where they again continued dancing until noon.

I should not omit to mention that after midnight the ladies underwent a second operation of the toilet.

The whole equalled, if it did not surpass, any of our own fêtes at home; indeed all who attended were much surprised, having little idea that Valparaiso could have made so brilliant and tasteful a display of beauty and magnificence.

TAKING GRASS TO MARKET.

CHAPTER X.

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CHAPTER X.

CHILI—CONTINUED.

1839.

Previous to my arrival at Valparaiso, the naturalists and some officers on board the Peacock and Relief had made excursions into the interior. On my arrival, I allowed all those who could be spared, and were desirous of visiting Santiago, sufficient leave to make the trip. Several set out for that city, and some with a view of extending their journey to the Cordilleras beyond.

The bilocheros were eager for opportunities to hire their biloches, a vehicle somewhat resembling a double gig, which is generally used for travelling in Chili. They have a most rickety and worn-out appearance; almost every part appears mended with cords made of hide. They accommodate two passengers; and the time required between Valparaiso and the city (Santiago), is about eighteen or twenty hours. In the shafts a horse is put; a postilion rides one on the left, and sometimes another is placed on the right, both being fastened to the vehicle by lassos of raw-hide proceeding from the saddle. Each vehicle is attended by three bilocheros or drivers, with a drove of twelve or fifteen horses, forming quite a cavalcade.

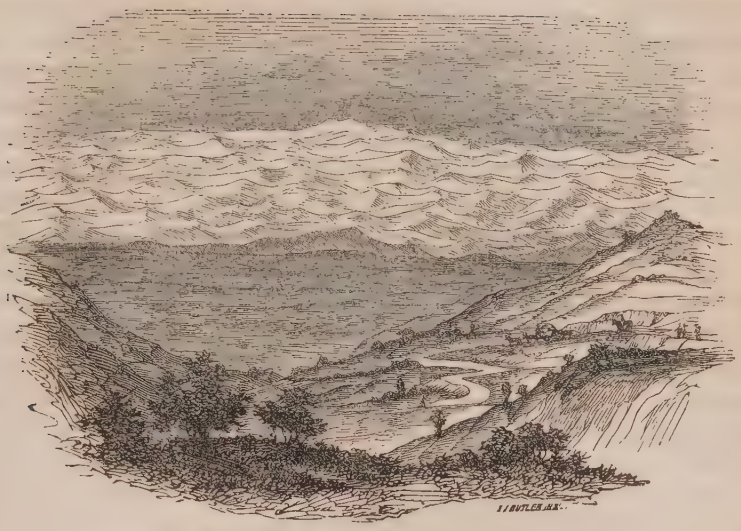
The bilocheros are very expert at their business. They are excellent riders, having been brought up to this exercise from their infancy, and understand managing their horses, though in a rude way. Their horses are small, but spirited, and bear fatigue well. Their usual speed is about nine or ten miles an hour. Few equipages can compare with these crazy machines, driven, as they sometimes are, pell-mell up hill and down dale, with all their accompaniments of horses, Guachos, &c.; and it affords no small amusement to those on foot, to witness the consternation of the affrighted passengers, in momentary expectation of a break-down, and a broken neck or limbs. It is a

difficult matter to acquire composure, on seeing the numerous temporary lashings, giving ocular proof that accidents have been frequent, however well satisfied one may be with the skill of the conductor. Fortunately the road is excellent, though at this season (May) it is divested of much of its beauty from the want of vegetation. The interest is, however, carried forward to the lofty peaks of the Andes, of whose summits occasional glimpses are had; and the eye glances over the surrounding scenery in the immediate neighbourhood, that would elsewhere be deemed grand, to rest on some high and towering peak. Among these the peak of Tupongati is the most noted, ranking, since the measurement of King, as next in height to the Himmaleh mountains.

The first stopping-place is at Casa Blanca, a small pueblo of some five hundred inhabitants, where travellers usually sleep. The accommodations were good, having been recently much improved. In the neighbourhood is the only tract of woodland to be found in this part of the country. The elevation of Casa Blanca, about thirty miles from Valparaiso, is five hundred and ninety-eight feet about the level of the sea. The primitive district extends about fifty miles from the coast, and of course is found here. It is composed chiefly of gneiss, which is generally easily decomposed. The mountains, in consequence, are not rugged, but of an easy ascent, and mural precipices are not met with. The gneiss was in some places observed to pass into hornblende rock, resembling the trachytic or igneous greenstone. It contains abundance of diffused epidote, and among the minerals schorl was observed, but no garnets were found.

The road from Casa Blanca next passes through Curacovi, a small pueblo, three hundred and forty-four feet above the level of the sea, where the trap rock first makes its appearance, and then over a high ridge, called the Cuesta de Zapata. This terminates the first plain, and divides it from the second, of similar character, which extends to the Cuesta del Prado. It is passed over by a zigzag road, and was found to be two thousand three hundred and ninety-four feet high. On reaching the top, the view that presents itself is extensive and magnificent.

In front is the extensive plain of Maypo, with here and there a conical mountain standing alone on it. At the extremity of the plain rise the lofty peaks of the Andes, covered with eternal snow, some reaching above the clouds. They appear but a few hours' ride off, although at a distance of twenty leagues. On either side rise the high ridges of the Cuesta. Beneath lie grazing grounds, extending over the plain, and covered with flocks and herds. Variety and life are given to the whole by the view of the national road, on which are seen numbers of



CORDILLERAS, FROM CUESTA DEL PRADA.

vehicles, mules, &c., threading their way up and down the mountain-side, laden with foreign and domestic products. This is the only road of any extent for wheel-carriages in the country. It is kept in good repair by convicts, who are seen working in chains. A moveable prison or lock-up house, somewhat resembling the cages used in caravans of wild beasts, is used for their accommodation and security at night.

The heavy merchandise is for the most part transported in ox-carts of enormous dimensions. Their wheels are clumsy and without tires, and the whole frame is made strongly with timber pinned together. Their perpendicular sides and rounded tops are wattled with cane and covered with bull's-hide. No iron is used in their structure; wooden pins and raw-hide lashings seem to answer the purpose better. The yoke is set on the heads of the oxen, behind the horns, and fastened to them. The creaking of these carts may be heard for miles, as the drivers never think of greasing the axles to lessen the friction. They are generally drawn by four or eight oxen. The wood-cut, at the end of this chapter, from a sketch taken by Mr. Drayton, will complete the description.

Lighter articles are transported by mules, and immense numbers of these animals are seen on the road at all times.

The mode of changing horses is truly characteristic of the country. The relays are made as soon as the shaft-horse tires; he is quickly taken out, and one of the drove caught with a lasso, and put in his place, when on they go. These relays occur every eight or ten miles; the only relief the poor horses have is a trot out of harness, and without a load. The bilocheros seldom dismount; all is done on horseback. On going up hill, a third or even a fourth horse is soon hitched to the vehicle to assist the draught. The horses are all in good condition, and it is not a little remarkable that they should be so, for I understood that their only food at this season was chopped straw. The teamsters and Guachos themselves are equally abstemious. They live mostly upon bread and their favourite chicha, which is made from the grape, and resembles cider; but after it has passed through a fermentation, it is quite intoxicating. The mud huts or ranchos, on the road-side, are filled with happy and contented faces.

PEASANT'S HOUSE.

Begging is common on the road to the city, and is quite a business. The beggars let themselves to the highest bidders, and value themselves according to their deformities. At Valparaiso two days are allowed in each week for begging.

The plain of Maypo, which reaches to the foot of the Cuesta del Prado, is extremely level, and is almost thirty miles in width, extending to the foot of the Cordilleras. The road leads nearly in a straight line over it to the city of Santiago, which is situated on the eastern side of the plain.

The elevation of Santiago above the sea is fifteen hundred and ninety-one feet, upon the third step or plain from the coast. Its entrance is through avenues bounded by high adobe walls, which shut out all the view, except the Cordilleras, which tower above and beyond it.

The more the Cordilleras are viewed, the greater appears their attraction. They have at all times an imposing aspect from the neighbourhood of the city. Their irregular and jagged outline is constantly varying under the effects of light and shade. The rays of the setting sun, with the deepening shadows, throw the innumerable peaks

into bold relief, and at times produce yellow and red tints, which give a remarkable character to the whole scene. The red tints are often accompanied with a green hue in the sky. The city is surrounded by many fine orchards, gardens, farms, and grazing grounds. The former being enclosed by high adobe walls, give it a rather unpleasant appearance, until the city is fairly entered, when the streets have a fresh and clean look. The city is laid out in squares. Its streets are well paved, and have good sidewalks. This fresh and clean appearance, we afterwards understood was owing to a law, obliging all to whitewash their houses and walls once a year, a practice which gives a general uniformity, at least in colour, to the whole, and forms an agreeable contrast with the red-tiled roofs. The houses are mostly of one story, built in the form of a hollow square, from twenty to forty feet wide, round which the rooms are situated. The roof projects so as to form a kind of piazza or covered-way. The gateway is usually large, and the rooms on each side of it are not connected with the rest of the building, but are rented as shops. Opposite to the gateway is the centre window, guarded by a light and ornamental iron frame, painted green or richly gilt. The court-yard is usually neatly paved with small rounded pebbles from the bed of the Maypocho, arranged in fanciful forms; but in many cases they are laid out in flower-gardens, where roses and geraniums are seen in full bloom.

The river Maypocho runs through one portion of the city, and supplies it with water, which is conducted through all the principal streets, assisting much in preserving their cleanliness, though not sufficient to supersede the necessity of scavengers. In the centre of the city is the great Plaza, where the public buildings are situated. These are built of a coarse kind of porphyry, obtained from the mountains, and are on a large scale. The cathedral and palace each occupy one side; in the centre is a fountain, with several statues of Italian marble; but which is entirely too small to have any effect in so large a square. All these buildings are much out of repair, having been at various times damaged by earthquakes.

The cathedral is very large and extensive. Its altar is decked with a great quantity of gold and silver. There are many paintings and hangings, among which is a large number of trophies, which have been taken in their various wars, and are here preserved. The niches are filled with wax figures, representing saints; and there are also the remains of two martyrs of the church, in a tolerably good state of preservation.

The palace was originally built for the Viceroy. It is now appropriated to the accommodation of the President, and the public offices.

On the side opposite to the palace is a colonnade, which is not yet finished, and will occupy the whole side of the square. Under its portico are fancy and dry-goods shops, and between the columns various trades, or lace and fringe-makers are at work. In the evening, this becomes a most busy scene. Females, with large flat baskets before them, are vending shoes, fruit, and fancy articles; others are employed in cooking cakes, and the whole lighted up as it is with numerous candles, affords much amusement to the stranger, besides giving him an opportunity to see a large number of the inhabitants. The greater part of those present are females.

The mint occupies a whole square; it has never yet been completed, and has also suffered greatly from earthquakes. The operation of coining is in the rudest and oldest form, the same as practised in Europe in the last century. The rolling and cutting are done by mule-power, and the oldest kind of fly-press, with a great screw beam, having enormous balls at the end, is used. The dies they use are made from the male die, in the same way as with us, but they have not the same facilities, and want the modern improvements in the process. A toggle-jointed press was imported from France; but it was soon put out of order by the workmen, and there being no one to repair it, its use has been abandoned.

The library is extensive, containing several thousand volumes, which formerly belonged to the Jesuits, and many curious manuscripts relating to the Indians.

The amusements are not very remarkable. Santiago, however, boasts of a theatre, and a chingano. There appears to be little business doing, and it may be called a quiet city. The siesta is daily indulged in; even the shops were shut in the afternoon, and the city is as quiet as midnight. Towards the cool of the evening, the Alameda is resorted to. It is a beautiful walk, about a mile in extent, well shaded, and occupies one bank of the river. It is planted with a double row of poplar trees, which seem to thrive well here. Streams of water are constantly running on each side of the walk. Every few yards stone seats are placed, which are at times filled with a well-dressed population. The Alameda affords at all times a cool and pleasant promenade.

The evenings are generally passed at tertulias, in visiting socially, or in shopping in the colonnade. The inhabitants are much addicted to gambling. Monte is the game with the higher classes, whilst that of match-penny is the favourite of the lower orders. The Chilian ladies are remarkable for their ease of manner, kindness, and attention to strangers. They are fond of diversions of any kind, but more

particularly those of dancing and music, both of which are much practised. They seem extravagantly fond of music. Dancing they are taught very young. Most of them have good figures, and some would be called quite pretty; but their teeth are generally defective, which causes them soon to look old. Their costume varies little from our own, except that the ladies wear no bonnets.

The gentlemen follow the European fashions.

The dress of the lower order is a mixture of Spanish and Indian. They are fond of bright colours. Over their shirt and trousers is worn a blue or brown poncha. A high-crowned and small-rimmed hat, tied on under the chin, over a bright cotton handkerchief on the head, completes their outfit. They are a well-disposed people, and good citizens, and have more the air of contentment than any other nation of South America.

MARKET PLACE, ST. JAGO DE CHILI.

The markets are well supplied. There is one large one near the banks of the Maypocho. It covers an area of four or five acres, and is surrounded by a low building, with a tile roof, supported by columns, under which meats of all kinds are sold. The centre is reserved for vegetables, fruits, flowers, poultry, and small-wares. The market-women are seen seated under awnings, screens, and large umbrellas, which are used to keep off the sun.

The whole is kept quite clean, and has a pretty effect. Fruit and vegetables are abundant and cheap. They are of excellent quality. The grapes and peaches are of the finest kind; apples are also plenty, but no care appears to have been taken to secure the best kinds. Cabbages, beets, potatoes, cauliflower, &c., are all large and good.

Beef is proverbially fine, and also the mutton; the prices are six and a quarter cents for the former, the latter three cents per pound.

The average price of a horse is twelve dollars, but some that are well broken are valued as high as those in the United States.

The climate of Chili is justly celebrated throughout the world, and that of Santiago is deemed delightful even in Chili; the temperature is usually between 60° and 75°. Notwithstanding this, it has its faults. It is extremely arid, and were it not for its mountain streams, which afford the means of irrigation, the country would be a barren waste for two-thirds of the year. Rains fall only during the winter months, (June to September,) and after they have occurred, the whole country is decked with flowers. The rains often last several days, are excessively heavy, and during their continuance the rivers become impassable torrents. The temperature near the coast does not descend below 58°. The mean temperature, deduced from the register kept at Valparaiso, gave 63°. At Santiago, the climate is drier and colder, but snow rarely falls. On the ascent of the Cordilleras, the aridity increases with the cold. The snow was found much in the same state as at Terra del Fuego, lying in patches about the summits. Even the high peak of Tupongati was bare in places, and to judge from appearances, it seldom rains in the highest regions of the Cordilleras, to which cause may be imputed the absence of glaciers.

Several of our gentlemen made an excursion to the Cordilleras, in order to get information in their various departments. I regretted they were not provided with the necessary instruments for ascertaining heights. The party left Santiago in biloches, and travelled to the eastward five leagues, to the "Snow Bank" from which the city is supplied. The ascent was gradual, but quite constant, as no intervening ravines occurred. They then took horses, leaving their biloches to return. Their route after this lay up a valley. On the surrounding heights the guanacoes were seen in great numbers. On reaching the head of the valley, one of the party became so unwell that he was unable to proceed, and was obliged to return.

Dr. Pickering, Messrs. Dana, Peale, and Drayton, went on. As they proceeded they found the middle region was marked by spiny plants, principally Burnadesia. The soil was found to be a mixture of loose earth and pieces of rock. On rising higher, the vegetation

became almost wholly extinct. Places occurred of an eighth of a mile in breadth, destitute of verdure of any kind. The party then ascended a ridge belonging to the main body of the Cordilleras, and at an elevation of about ten thousand feet, they reached its summit. Here they had an extensive view of all the line of the snow peaks. That of Tupongati appeared the most conspicuous, although at a distance of eighty miles. The guide asserted that he could see smoke issuing from its volcano in a faint streak, but it was beyond the vision of our gentlemen. The peak itself from this view of it was quite sharp-pointed. The scene immediately around them was one of grandeur and desolation: mountain after mountain, separated by immense chasms, to the depth of thousands of feet, and the sides broken in the most fantastic forms imaginable. In these higher parts of the Cordilleras they found a large admixture of the jaspery aluminous rock, which forms the base of the finest porphyries; also chlorite, in abundance. The rock likewise contains fine white chalcedony in irregular straggling masses. Trachytic breccia was observed in various places. The porphyry is of a dull purple colour, rather lighter than the red sandstone of the United States. No traces of cellular lava were seen, nor of other more recent volcanic productions. No limestone was seen in the regions traversed by our parties; all the lime used at Santiago is obtained from sea-shells; nor were any proper sedimentary rocks seen.

Nothing could be more striking than the complete silence that reigned every where; not a living thing appeared to their view.

After spending some time on the top, they began their descent; and after two hours' hard travelling they reached the snow line, and passed the night very comfortably in the open air, with their blankets and pillions, or saddle-cloths. Fuel for a fire they unexpectedly found in abundance: the Alpinia umbellifera answering admirably for that purpose, from the quantity of resinous matter it contains. Near their camp was the bank of snow before spoken of, from which the city has been supplied for many years. It covers several acres. The snow line here seemed to have remained constant, and would have afforded a fine opportunity to have verified the rule of Humboldt, but they had no instruments. The height they had ascended was supposed to have been about eleven thousand feet, and the Cordilleras opposite them about four thousand feet higher. The view of the mass of the Cordilleras, in its general outline, was not unlike those of Mont Blanc and other mountains in Switzerland.

Mr. Peale went in search of the guanacoes, and succeeded in killing one nine feet in length and four feet in height. They were found to

frequent only the most inaccessible summits, and are said never to leave the vicinity of the snow. They feed upon several small thorny bushes, which impart a flavour to their flesh, and a smell to their excrement that may be distinguished at some distance from their places of resort. They make a peculiar sound when alarmed, like that of the katydid, (Gryllus.) This animal is never hunted for the market, though its flesh is good. The Benzoar is often found in its stomach, and is highly prized among the natives and Spaniards as a remedy for various complaints. It is also used as a gum.

All the party suffered greatly from the heat of the sun's rays, and the dryness of the atmosphere. Their faces and hands were blistered, and the nose and lips made exceedingly sore, while the reflection of the light from the snow caused a painful sensation to the eyes.

The next day they reached Santiago, whence they returned to the *Port*, as Valparaiso is usually distinguished in the country.

Over the Maypocho at Santiago there is a substantial stone bridge, with five arches. For nine months of almost every year, the bed of the stream is nearly dry. At the time of our visit it was about two yards wide and several inches deep; but in the winter and spring, during the melting of the snows, it becomes quite a torrent, and from the damage that has been done in former times, they have taken the precaution to wall it in on the side of the city, towards the Cordilleras, for several miles, with stone and hard brick. When swollen it is a quarter of a mile wide, rapid and deep, and would cut off the communication with the surrounding country were it not for the bridge.

Messrs. Couthouy and Dana were desirous of making a trip to the copper mines of San Felipe, to which I readily consented, and gave them all the time possible. Although this was short, yet by their indefatigable industry it afforded some interesting results. They left Valparaiso on the 17th for San Felipe, which is about one hundred miles north of Valparaiso. They were to have taken a barometer with them in case of ascending some heights, but it was forgotten.

These gentlemen took a biloche as far as Quillota, a distance of forty miles, and proceeded thence to San Felipe on horses; for the use of which they were to give thirty dollars each, and one dollar extra for the service of the peon who accompanied them, for seven days. The road to Quillota was found good, although many hills and valleys were met with.

For the first twenty-five miles the road passed along the sea-shore, with no elevation over two hundred feet; it was thought equal to the most frequented turnpikes in our own country. At six miles from Valparaiso, the road is cut through a bed of sienite, remarkable for

the singular vertical dikes of granite by which it is intersected. As this curious formation will be ably treated of in the Geological Report, I shall refer the reader to that for a description.

Ten miles from Valparaiso, the valley of Villa del Mar, having a breadth of nearly three miles, is crossed. This is a sandy plain, through which a broad shallow stream, coming from the eastern hills, runs. At twenty-five miles they reached the broad valley of Concon. Here the road turns to the eastward. This valley varies in width from three to six miles. The character of the rocks is granitic, and they appear to decompose rapidly when exposed to the air. Sienite was frequent, and on approaching the mountains, numerous varieties of trap formation, greenstone, porphyry, &c., were met with.

Ten miles before reaching Quillota, the road passes over a level plain, which extends beyond that place. The hills which bound the valley to the south, are of low elevation until approaching Quillota. Near Quillota, in the south and southeastern direction, a lofty ridge rises, adjoining the campagna of Quillota, which is one of the high cones used as sea-marks for the harbour of Valparaiso. This is lost sight of at the town, in consequence of it being shut out by an intervening ridge. The town, or city of Quillota, occupies the centre of the valley, and is twenty miles from the sea. They reached it about one hour before sunset, when they stopped at Mr. Blanchard's, who keeps a house for the accommodation of foreigners.

On the 18th they arose at daybreak, at which time the thermometer stood at 36° in the open air, seventy feet above the sea.

The town of Quillota, (according to Mr. Blanchard,) is embraced within a circumference of three leagues. It contains several churches, of simple construction. The "Calle Largo," the longest street, is upwards of a league in length. The same authority gives its population at ten thousand inhabitants. The houses are all of one story, and are built of adobes, with thatched roofs. There is an abundance of fine building-stone, but in this land of earthquakes, it is considered safest to use the lightest materials. Almost every house has a vineyard attached to it, the grapes of which were of good quality, and very abundant. At some places, although the vintage was half gathered, yet the crop still on the vines was such as would have been considered elsewhere an abundant yield. A portion of the grapes rot upon the vines, as the inhabitants have not the industry or inclination to manufacture them, although by proper attention they would yield a good wine. As it is, they only manufacture some into a hard and acid wine, called *Masta*, or boil the juice down to the favourite drink of the lower classes, called *Chicha*, which somewhat resembles perry or cider in

flavour. The small quantity that is not consumed, is distilled into aguardiente, and disposed of at Valparaiso. Besides grapes, considerable quantities of wheat and Indian corn are cultivated. Apples, pears, and quinces, are also raised. The former are inferior to our own, the latter much superior, and in great plenty.

Oranges were also abundant, but of indifferent flavour.

Quillota is well supplied with water from the river Concon or Aconcagua. The water is led through all the streets and gardens of the place. It is used for all household purposes, as taken directly from the gutters, which are the recipients of dirt of every description from the town. For drinking, it is allowed to settle in large jars kept for the purpose.

The intercourse with strangers at Quillota, has been much less than at Valparaiso or Santiago, and consequently they are less liberal, and more bigoted. This was particularly shown, about four years previous to our visit, by their burning in the public square, a large number of Bibles in the Spanish language, along with a heap of immoral and indecent pamphlets, in the presence of the civil, military, and ecclesiastical authorities. These Bibles had been distributed by our countryman, Mr. Wheelwright, who has done so much by his enterprise in introducing the communication by steam along the western coast of South America.

In the morning early, the thermometer stood at 36°. The greatest cold is experienced just before sunrise and after sunset.

On leaving Quillota, they went through the "Calle Largo," and took the southern side of the valley, passing along the foot of the Mellacca Hill, a smooth and rounded elevation, about three hundred feet in height, and a mile and a half in circumference. This hill is covered with a thin soil, formed from the decomposition of its own rocks. The valley now narrows, and in some places is not more than a few hundred feet in width. At about a league from Quillota, they ascended a cuesta of the Quillota ridge, one thousand feet above the plain. On its top, they were much gratified with the beautiful prospect. The fruitful plain or vega of Aconcagua, varying in width from one to six miles, extends to the west some twenty miles to the ocean, and is lost in the other direction in the mountains; it is watered by pure streams, and covered with farm-houses and hamlets, surrounded by trees and vineyards. To the northeast are the Andes, heaped as it were on each other, until the towering and distant peak of Tupongati, with its giant form, crowns the whole. One feature of the plain was peculiar: the mountains seemed to sink into it as if it were the ocean itself. In some cases the line was so well defined, that one foot could be placed

on the plain, and the other on the base of a mountain, rising six or seven thousand feet high. The sketch will give a better idea of it than any description. The distance of Tupongati is about forty leagues.

VIGA OF THE CONCON, WITH TUPONGATI IN THE DISTANCE.

Captains King and Fitzroy have made the height of this peak several hundred feet above Chimborazo. The surrounding mountains, though from ten to twelve thousand feet high and much nearer, sink into insignificance when compared with it. Indeed all the objects are upon such a grand scale, that they fail to excite the notice that they would attract if situated elsewhere. On the top of this cuesta, Mr Couthouy obtained, in a torpid state, a small quadruped of the size of a mouse, a very interesting specimen of the order Marsupia. A description of it, with a spirited drawing by Mr. Peale, will be found in the department of Mammalogy.

The road over the cuesta was narrow, steep, and broken. It descended into a plain, which was found well cultivated and watered by a branch of the Aconcagua.

The ridges on the northern side of the valley now became more lofty and precipitous, exhibiting the columnar structure more distinctly. The trap dikes were in some places four feet wide; and in one place, where the rock had been cut to form the road, fourteen dikes were counted within three hundred feet. On their way up the valley, the peon's horse gave out, and they were obliged to stop and hire another at a farmer's house, who was called Evangelisto Celidono. This rancho, twenty feet by ten, was rather better than others that were met with, but at the same time bore a strong resemblance to them. It

was constructed of large adobes, or rather blocks of clay, and finished in the inside neatly with the same material. It consisted of but one apartment, the floor of which was clay. It had a thatched roof, which was open in several places. There was no window. The door and the holes in the roof supplied all the light. The furniture, if such it could be called, consisted of a rude bedstead and an apology for a table, at one end; the other was divided into three bins, one to contain corn, another beans, and the third potatoes, with saddles and various kinds of horse-gear, and a bag or two of wheat. On one side was a clay seat, three feet broad by six long, and the height of an ordinary seat, whilst from the rafters hung in nets a good supply of bread, cheese, and numerous strings of onions, garlic, and red Chili peppers. There were besides two chairs and a bench. All the cooking is done in a small detached building; and a small clay oven in the yard is an accompaniment of every rancho. Bread and an abundance of grapes, of which they could not eat more than a third, were supplied them for a "medio." The second cuesta was shortly afterwards mounted, of about five hundred feet elevation, and on the top they were gratified by witnessing the mode in which the Chilians capture the wild horses. A party of four or five horsemen, with about twenty dogs, were seen formed in an extended crescent, driving the wild horses towards the river with shouts. All were armed with the lasso, which was swinging over their heads, to be in readiness to entrap the first that attempted to break through the gradually contracting segment; the dogs serving with the riders to head the horses in. They continued to advance, when suddenly a horse with furious speed broke the line, passing near one of the horsemen, and for a moment it was thought he had escaped; the next, he was jerked round with a force that seemed sufficient to have broken his neck, the horseman having, the moment the lasso was thrown, turned round and braced himself for the shock. The captured horse now began to rear and plunge furiously to effect his escape. After becoming somewhat worn out, he was suffered to run, and again suddenly checked. This was repeated several times, when another plan was adopted. The dogs were set on him, and off he went at full run, in the direction of another horseman, who threw his lasso to entangle his legs and precipitate him to the ground. The dogs again roused him, when he again started, and was in like manner brought to a stand; after several trials, he became completely exhausted and subdued, when he stood perfectly still, and allowed his captors to lay hands upon him. The shouts of the men, the barking of the dogs, and the scampering of the horses, made the whole scene quite exciting.

Shortly afterwards, it was suspected their peon was leading them astray; this was evident by their crossing and recrossing the river, and wandering at random on a road which was apparently but little travelled. After a toilsome route of three and a half hours, they found themselves surrounded by many branches of the river, whose banks were but a few inches above the water. The peon then acknowledged himself bewildered, and that he had missed his way. Crossing the streams was attended with some danger, for owing to their rapidity and depth they were near sweeping the horses off their legs. Returning a league or two, they fortunately met a muleteer, who put them in the road; but their horses were now so exhausted that they were compelled to seek lodgings at a rancho. After applying at several, they succeeded in getting a place to lie in, after making many promises of liberal payment. A similar course, notwithstanding a positive refusal or denial of having any provisions, procured them a casuela, served in a large wooden bowl, with wooden spoons. This is a sort of Chilian chowder, with a plentiful supply of garlic, onions, Chili pepper, &c., and one of the favourite dishes of the country. In three days' ride they had passed over about sixty miles; the highest temperature experienced was 65·5°, the lowest 35·7°. At the rancho where they stopped for the night, the temperature fell 20·5° in three hours.

They passed the night with the usual annoyance in most houses in Chili, for fleas were found in great abundance. In the morning the temperature was 35·5°, and the ground covered with hoar frost. The rancho was supposed to be about one hundred feet above the level of the sea. The mountains in the immediate neighbourhood were from six to seven thousand feet high, exhibiting a gorgeous appearance as the sunbeams lighted them up, and at times the brilliancy was so great as to dazzle the eye. They left the rancho at seven o'clock, and although it was only ten miles distant, they did not reach San Felipe before eleven. The road passed over a third cuesta, which exhibited a regular columnar structure. The hills inclining to the northward open and present to view the broad plain of Aconcagua. San Felipe de Aconcagua stands about fifteen miles from the foot of the Andes, and the mountains are seen from thence in all their grandeur. The peak of Tupongati is, however, lost sight of as the town is approached, disappearing behind the nearer snowy peaks. This mountain is situated on the dividing or eastern ridge of the Cordilleras, and within the United Provinces of La Plata.

On arriving at San Felipe, they proceeded at once to the house of Mr. Henry Newman, an English gentleman resident there, and engaged in mining operations, to whom they had letters. Mr. Newman was

not at home, but they were hospitably received by his lady, a native of Chili, who treated them with great kindness and attention. In the absence of her husband, she made them acquainted with an American gentleman, a Mr. Chase, who happened to be on a visit there, from Santiago. He had been in Chili since the failure of the expedition of Carrera, when he, with several of his companions, settled in Chili, and afterwards engaged in mining operations. He had several times amassed a large property, and as often lost it, by the revolutions that had taken place in the country. He is now engaged in working a silver mine, in the vicinity of Santiago, and attempting the German process of smelting, as there are vast quantities of ore, containing a large per centage of silver, which have hitherto been neglected, from the impracticability of separating the silver by the usual method. There is now only one survivor from among the thirty persons who settled in Chili with Mr. Chase. From his operations he expects in a few years to realize a large fortune.

The town of San Felipe is laid out with great regularity, in the form of a square, surrounded by extensive alamedas, which are planted with Lombardy poplars. Mr. Newman gave the population at from twelve to thirteen thousand. In the centre of the town is a large open square, one side of which is occupied by the town hall, and offices connected with the muncipality. Opposite are the church and barracks, and the remaining sides are occupied with shops and private dwellings. The houses are all of one story, and are in a good style of building. The better class of houses stand some distance back from the street, and are decorated tastefully with paintings in fresco on the walls. Roses and jessamines were seen in every court-yard, and the gardens are well filled with various fruits, apples, peaches, pears, grapes, pomegranates, oranges, lemons, and quinces; the latter are remarkably fine, and in great plenty. The houses, as in other parts of Chili, have no fire-places, in lieu of which they use *brazeros*, or pans of live coal when heat is required. Mr. Chase took them to a friend of his, to see the process of manufacturing the acida and aguardiente of the country. The whole process is carried on in a large court behind the house. The grapes are brought in large baskets, or on hand-barrows, made with poles and raw hide, and are emptied in heaps, under an open shed. Here several small boards are placed, on which the grapes are laid by the men, who separate them from the stalks, by rolling them rapidly in their hands, the grapes falling along the boards, which are inclined into a large vat, where they are trodden out by men. The juice, which runs off through a rude strainer at one end, is received into large earthen jars; the pumice, or residuum, is

from time to time taken out of the vat, and placed on a platform, when more juice is expressed, by laying boards and heavy stones upon it. That part which is intended for wine proper, or the "must," is received like the first into earthen jars, where it undergoes the requisite fermentation, and receives a small quantity of brandy, or the aguardiente of the country, to give it body. The chicha is made by boiling down the clear grape-juice after fermentation, for several hours, over a slow fire. After this process, it was put in enormous earthen jars, containning sixty to one hundred and twenty gallons, which are covered over, and tightly luted. The portion not required for consumption, is afterwards distilled with the pumice into aguardiente of the country. The stills were of the simplest construction, being nothing more than a number of large earthen pots, holding from eighty to one hundred gallons, placed in the ground over a long narrow oven. Instead of a worm, a straight pipe of copper is used, about twenty feet long; one of these was inserted into each pot or jar, and to effect the condensation, a stream of water from the river was led so as to pass over them. All the agricultural implements are equally rude and primitive. The ploughs are nothing more than a crooked stick, with the share-end pointed, and hardened by charring. Notwithstanding these disadvantages, they are enabled to raise large crops, and bring their farms into tolerable condition.

In the evening they had the pleasure of seeing Mr. Newman, who returned; and his reception of his guests was, if possible, even more kind than that of his good lady. Learning that our gentlemen wished to visit some of the mines in the neighbourhood, he immediately made arrangement to send his agent to his own establishment, five leagues beyond San Felipe, and provided them horses and mules, in order that their own might recruit for their return journey. The temperature at San Felipe varied, between noon and 10 P. M., from 63° to 49°. The night was remarkably clear and fine.

The next morning they started, with Mr. George Alderson, for the mines, which are near the summit of the first Cordillera, on the Mendoza road, and about three thousand feet above the level of the sea. They were here informed, that in consequence of the late heavy falls of snow, the roads were all covered and congealed, and that it extended several thousand feet below the limit of perpetual snow. They had no use for the neglected barometer, and had some satisfaction in feeling they had not been troubled with it. About a league from San Felipe they passed a large porphyritic mass, some specimens broken from which contained grains of quartz. They then passed up a singular gully, about twenty feet deep and as many wide, for about

a league. On leaving the gully, they gradually ascended until they reached the ranchos at Jaquel, at the foot of the mountain where the mines were situated. It being too late to make the ascent to the mines that night, the running streams in the neighbourhood were visited, but nothing was found. They were entirely destitute of fluviatile shells and mollusca. Other objects of interest were, however, obtained, in the classes of insects and reptilia, which will be described in the reports of these different departments. At sunset the snowy mountains exhibited a magnificent sight; lighted up and glistening in the sunshine, it appeared as though some tremendous conflagration had broken out. After this, the progress of night produces a peculiar effect. It was quite dark in the valley, while the lofty summits were yet tinged by the setting sun. The limit of darkness was distinctly seen advancing upwards like a dark wall, and as it ascended, peak after peak became lost to view, until the whole was enshrouded in obscurity.

The part of this valley where the ranchos are situated is called La Vega of Jaquel. This is the principal smelting-place, the ore being brought here by mules from the foot of the mountain, down whose sides it is thrown from the mines. The descent is about two thousand feet, and very steep. Mr. Alderson stated that it took thirty seconds for the ore to descend. The face of the mountain from long usage in this way is worn quite smooth. The ranchos at the mine, about six hundred feet below the summit, on the steep mountain side, are visible from the smelting huts. The Jaquel valley is said to contain a few sulphur springs, which are reported as poisonous. Our gentlemen had not time to visit them. The temperature, before leaving San Felipe, at six o'clock, A. M., was 45°, at 10 A. M., 54°; at Jaquel, three hundred feet above the sea, at $5^h\ 30^m$, it was 55°, at 11 P. M. 51.°

Mr. Newman had previously lost much property here by the burning of his whole establishment, excepting two buildings, fire having been communicated to the thatched roof by the sparks from the furnace, during a tornado that passed over. So rapidly had the flames spread, that it was with difficulty that Mr. Newman and his agent saved their lives. Besides the loss of buildings, a large quantity of machinery, lately imported from England, was destroyed.

On the 21st May, they set out on mules for the mines, accompanied by Mr. Alderson, and reached them about ten o'clock. Their first act was to change their boots for a pair of raw-hide shoes, such as are used by the miners, in order to insure a safer footing. They now entered the principal gallery, which was about seven feet high and five broad, excavated for about twenty yards horizontally; it then divides

into several branches, and these again into others, from fifteen to twenty yards in length.

The greatest extent of any one gallery is about thirty feet. The mountain has been penetrated horizontally to about four hundred feet, in the direction of northeast to east-northeast, as the veins run, and vertically to a depth of about one hundred and fifty feet. Each person was provided with a tallow candle, stuck in the end of a split stick six feet long, and caution was given not to lose sight of the guide, for the galleries, although small, are so numerous, and communicate with each other so frequently, that a person might easily be lost.

The ladders, or rather posts, by which the descents are made, are not a little dangerous. They are not all secured, so that it becomes necessary for one person to hold the ladder whilst another descends, and it causes no small uneasiness to see the foot of it resting on a mere ledge. These shafts are at times crossed by a gallery, where but a single post is laid over them, and the men pass over it by steadying themselves against the side-wall. At the bottom of one of the shafts, at about three hundred feet from the mouth of the mine, the thermometer, after remaining for half an hour, stood at 52°, the air outside being 56°. This may be considered a fair test of the temperature. They report that they perceive no difference in the mine, in winter and summer.

There appears to be little system in working the mines, and little knowledge of the structure of the rock or the courses of the veins. Mr. Alderson mentioned that a few months previously, they had been working for several weeks, extending a shaft, without meeting a particle of ore to repay their labour, and they were just about giving up the search, when the mayoral, or master-workman, declaring he would have a last blow for luck, struck the rock with all his force. This detached a large fragment, and to their surprise and delight, laid open a vein which proved the largest and richest that had been worked for many years. From this it would appear that the employment is attended with much uncertainty; and after exhausting one of these treasure deposits, there are no means or signs known to them by which they can ascertain the best direction to take to discover another.

This mine is situated in claystone, the sedimentary rock of the region, where it is intersected by a dike of compact clinkstone. The dike is about six feet wide. The adjoining claystone has a dark greenish brown colour, and resembles a wacke. It is so much fissured that it is difficult to break off a small piece which will present a fresh surface. The green carbonate of copper, and silicious carbonate of

copper (chrysocolla), stain the rock for one hundred feet from the vein, occupying the fissures, and giving the surface a green or bluish tinge. In some places chrysocolla forms in small botryoidal incrustations on the face of the rock. The ores of copper occur in veins in the claystone and the rock of this dike, but most abundantly near the junction of the two rocks. The veins are very irregular, and are more or less elongated. They are occasionally connected, but in the excavations frequently run out. In order to discover new ones, they follow the lines of the green carbonates, or the seams of calcareous spar and quartz. The name of *metal* is given as a general term to all the ores, that of *quizo* to the lode in which they are contained.

The ores contain more or less sulphur, and often a portion of arsenic. Some silver is also occasionally mixed with the copper. Some of the ores found at this mine have been very rich, yielding sixty-five to seventy per cent. of pure copper. The average yield is about forty-five per cent. The various qualities are denominated, *metal-regio*, *platiado*, *bronze*, and *piedra bruta*. The last, as the name implies, is worthless.

The mines, by the light of the numerous candles, exhibited all the shades of green, blue, yellow, purple, bronze, &c., having a metallic and lustrous appearance. The confined air, with the heat of so many candles, made it quite oppressive; and persons who have not often visited mines, are subject to faintness and vertigo from this cause. Mr. Alderson and Mr. Dana were both affected by it. It was the first time the former had ever penetrated so far, Mr. Newman and himself being governed by the report of the mayoral, and the ore brought up in their operations. The miners were not a little astonished at our gentlemen loading themselves, besides the specimens of ores, with the piedra bruta, which they considered of no value. The manner of labour in the mines is in as rude a state as it was found in the agricultural branches of industry. A clumsy pick-axe, a short crowbar, a stone-cutter's chisel, and an enormous oblong iron hammer, of twenty-five pounds weight, were the only tools. The hammer is only used when the ore is too high to be reached with the pick or crowbar. The miners, from the constant exercise of their arms and chest, have them well developed, and appear brawny figures. When the ore is too tough to be removed by the ordinary methods, they blast it off in small fragments, not daring to use large blasts, lest the rock should cave in upon them. Only a few weeks previous to their visit, the mayoral, while at the farthest end of the gallery, was alarmed by the rattling down of some stones, and before he could retreat, the walls caved in

for several yards outside of where he was, leaving but a small space. It required eighteen hours of unceasing effort by nearly a hundred men to extricate him from his perilous situation.

The ore is brought to the mouth of the mine on the backs of men, in sacks made of raw hide, and holding about one hundred pounds. Whenever a sufficient quantity to load a drove of mules is extracted, it is thrown down the mountain slide, and then carried to the furnace at Jaquel. Only seventeen miners were employed; previous to this the number employed was one hundred. Whenever a richer vein was struck a larger number were employed, who could always be easily obtained by foreigners, the natives preferring to work for them, as they say whatever the profits or losses may be, they are sure of being regularly paid. The wages are small—from three to four dollars per month, in addition to their food. They are allowed to draw a third of their pay on the last Saturday of every month, and full settlement is made twice a year. They are supplied with clothing and other necessaries, out of which the agent makes a per centage, and which is charged against their wages.

There is one admirable regulation of the Chilian government, that of not permitting liquors to be brought within a league of any mine, under a severe penalty, which is strictly enforced. The cost of the maintenance of each workman is not great; they are allowed as rations for breakfast four handfuls of dried figs, and the same of walnuts: value about three cents. For dinner they have bread, and fresh beef or pork. Small stores, as sugar and tea, they find themselves. One of the greatest inconveniences, and which is attended with some expense, is the supply of the miners with water, which has to be brought up the mountains.

The miners' huts are the last dwellings on the Chilian side of the Andes. Mr. Alderson mentioned, that in five hours' ride from thence, a lake was reported to exist, three leagues in circumference, on the summit of a conical mountain, which is surrounded by a beach of sand and gravel, and has no outlet. Several persons confirmed this statement as to the existence of the lake, that it had no visible outlet, and that the water was always at the same level. Although desirous of visiting so interesting a spot, they found they had not time left to accomplish it. They therefore determined, instead, to make a visit to the coal-mine which was reported as existing about two leagues farther on the Cordilleras. They reached this in about three hours. Leaving their mules, they scrambled up the face of a cliff for some two hundred feet, where some fragments of coal, more, however, resembling lignite, and retaining perfectly the structure of the original wood, were found.

Other pieces had the form of coal, and on ignition burned quite freely, showing the presence of bitumen and sulphur. The last was always found in small lumps, resembling the siftings of coal, and was embedded in a friable earth, containing saltpetre. No coal was found *in situ;* their time did not admit of any extended examination. Coal would indeed be a most valuable discovery for the Chilian mines, where wood is so scarce that they are prevented from reducing the ore, and in consequence, as I have before remarked, they are obliged to send it to Valparaiso for shipment. The principal ores which the mine of Mr. Newman affords, are the vitreous, gray, and variegated copper. Copper pyrites and the red oxide of copper, also occur, and the silicious carbonate (chrysocolla) is abundantly disseminated through the rocks. These ores are generally massive, or exhibit only imperfect traces of crystallization. Native copper is rarely found at this mine. Its occurrence is not welcomed by the miners, as they consider it a sure sign that the vein will soon run out. It is usually found with large quantities of red oxide of copper. According to Mr. Dana, this would seem to indicate that the native copper and red oxide have originated from the reduction of other ores by heat, and this would account for the above fact, which seems to be well established among miners.

Copper ores occur sparingly at other localities in this part of Chili; the valuable mines are chiefly confined to the northern provinces.

After again returning to Jaquel, they mounted their horses, and reached San Felipe, in about two hours' hard gallop. The temperature during the day varied from 44° at six o'clock in the morning, at Jaquel, to 58° at noon, on the hill at the mines; and at 10 P. M., at San Felipe, it was at 47°.

On the 22d, they set out on their return, after a good deal of delay, owing to the stupidity of their peon, who had indulged too much in his favourite chicha. Nothing could exceed the kindness and attention shown them by Mr. Newman, his lady, and Mr. Chase. Mr. Alderson, the agent, devoted himself to them for two days, during which time he left nothing undone that could promote and forward the object of their visit. It affords me great pleasure to bear testimony also to the numerous fine specimens of copper, &c., from other mines, which Mr. Newman presented to the Expedition, and to return him our thanks for them and the kind attention of his lady. Our gentlemen returned to the rancho of Evangelisto Celidono, where they passed the night, and were furnished with a like casuela as before. All the farmers they met were a simple, good-hearted set, caring for little beyond their own immediate neighbourhood, and knowing little but to supply their own

wants. Celidono informed them that he had been at the Port (Valparaiso) only once in five years. He seems to have all that is needful. His wife was engaged in spinning with the distaff and spindle. There being but one room, they were accommodated on the clay floor, spread with their pillions and saddle-cloths, while Celidono and his wife occupied the bed. The temperature varied from 65·30° on their arrival, at 5^h 30^m, to 53°, at 11 P. M.

On the morning of the 24th, the thermometer stood at 51°, on the summit of the cuesta, and at 58° between nine and ten o'clock. Here the scene was very different from what they had before witnessed. The plain they had just left was in broad sunshine, showing distinctly its many cultivated farms; that to which they were about descending was a sea of dense white clouds, extending seaward as far as the eye could reach, as though a vast body of white cumuli had descended and filled the whole extent of the Quillota valley. These clouds kept rolling off towards the sea, before the light wind, and rose gradually as they passed off. They reached Mr. Blanchard's, at Quillota, at noon, when the temperature was 60°, and taking their biloche, they arrived at Valparaiso in the evening.

Having heard much about the rise of the coast, from the effects of earthquakes, I was desirous of gaining all the information in relation to this subject. From the residents, the accounts are so contradictory, that no correct intelligence can be obtained. The decrease in the depth of the bay, I have before said, can be accounted for, and undoubtedly is owing, so far as it has taken place, to the wash of the hills; and the formation of a new street which has been reclaimed from the bay, has given rise to the idea, and it is pointed out as having been built upon ground left dry by the earthquake of 1832. Several of our naturalists made a close examination of the coast in the neighbourhood, the result of which on the minds of all was, that there was no proof of elevation. That changes in the beaches, through the agency of the heavy rollers and the northers that yearly occur, are constantly going on, is quite evident; but these, as one would naturally suppose, increase the shore only in some places, while in others they are wearing it away.

Earthquakes do not appear to happen at any particular season. The great one of 1730 was in July; that of 1751, in May; and those of 1822 and 1835, both of which did much damage, in February.

Slight shocks of earthquakes are experienced very frequently throughout Chili. One during our stay, on the 28th of May, started every one from their beds, but the shock was not repeated. No peculiar state of the weather, or other phenomenon, seems to precede them. That of

1835 nearly destroyed the towns of Concepcion, Talcahuana, Arauco, Angeles, Coluna, Chillian, Talca, and Cauquenes. It was very slightly felt in Valparaiso, and scarcely at all farther north. The sea receded in Valparaiso two feet, and returned immediately. The ground seemed to swell under the feet. In Juan Fernandez, it was very severely felt; and the following extract from the report of the then governor of that island, to the supreme government, is interesting. "I was walking, at the Castle of Santa Barbara, with the commandant of the garrison, when we suddenly observed that the sea had come over the mole. Fearing great damage, I hastened to have the boats drawn from under a shed, and prepared for use. At the same moment we heard a loud roaring, as of thunder, and saw a white column, like smoke, rise from the sea, a short distance from the place called '*El Punto de Bacallao*,' and then felt the earth move. The sea retired about two hundred feet, when it commenced returning with great violence. This time it carried nearly every thing with it; broke down all the houses and huts but the one recently built of stone and mortar to contain provisions. Happily, this withstood its violence, although the water ascended more than six feet up its sides. It then retired again to its usual height. Constant shocks were felt during the night; and the sea, at the place before mentioned, continued throwing up water and smoke like a volcano."

Chili abounds with volcanic mountains, but few of them are in an active state of eruption; which may account for the frequency of earthquakes. The peak of Tupongati is the only one in activity in this section. Our travellers to the Cordilleras were not fortunate enough to get a sight of it at night.

Although by the constitution the Catholic religion is the established one, yet they have become so far enlightened as to tolerate that of the Protestant Episcopal form. A license could not be given to build a church, but the authorities, on being asked if the worship would be permitted, readily gave an assurance that it would not be interfered with; that although they could not allow a church to be put up, there could be no objection to their worshipping in a private dwelling. Since then, a very convenient room has been prepared, and a resident chaplain, Mr. Rowlandson, has been called, who officiates regularly on the Sabbath. The effect that it has produced on the habits of the foreign residents, of whom there are about three hundred, is marked. About one hundred and eighty of them are constant attendants on the service.

What is somewhat remarkable, the person most in favour of toleration and building a church, is the priest of Valparaiso; and the only

vote recorded for toleration, on the adoption of the constitution, was given by a Catholic bishop.

The influence of the clergy is great, and they have much political power in the state. The people may generally be called bigoted, and under the control of the priests. The clergy as a body stand very fair; they encourage schools. The inhabitants are ignorant as yet; their opportunities for instruction are limited. There is no impediment in the way of Protestants teaching.

Although it may be somewhat trite to mention it, yet one cannot but admire the sight of the *Oracion*, or sunset prayer. Whatever may be our idea of Catholic worship, no one can witness it here without feeling the solemn and impressive scene of a whole community, on the striking of the evening bells, instantly stopping employment, both within and without doors, and uncovering their heads to offer up their thanks or prayer for a few minutes. It must bring reflection, unless habit so blunts the mind and feeling as to make it callous to impressions well calculated to make men consider their evil ways, and feel thankful for the blessings they enjoy.

The commerce of Chili is increasing rapidly. Valparaiso numbers sixty coasting vessels, of from fifty to three hundred and fifty tons, part of which are engaged in the trade from Valdivia and Chiloe to the northern ports, with timber and staves; and part are charged from Maule and Concepcion with grain, returning in ballast to Valparaiso, to load with foreign manufactures for the various ports of the republic. The exports are taken away in foreign vessels, and consist of copper, hides, wool, hemp, and plata piña. About sixty thousand quintals of copper are exported from Huasco, Coquimbo, and Valparaiso annually; one hundred and fifty to two hundred thousand quintals of 100 lbs. in copper ores are shipped annually to England, and one hundred thousand marks of 8 oz. in bar silver. The returns from sales of English goods are made mostly in bullion.

Thirty thousand hides are exported, principally from Valparaiso. Five to six hundred quintals of wool are shipped annually from Concepcion. The grain and country produce are generally sent to Peru and Guayaquil. Very little silver is coined in the country, dollars being an article of merchandise, worth from seven to nine per cent., according to the supplies from Bolivia or Peru. From eight hundred thousand to one million silver dollars come annually from Cobija to Valparaiso, and are shipped thence to England. Gold coins are issued from the mint at Santiago, doubloons, half, quarter, and eighth doubloon pieces; the current value of the ounce is seventeen dollars twenty-five cents.

The annual imports into Chili and Peru have averaged—

From England,	$6,000,000
" the United States,	1,500,000
" France,	600,000
" Germany,	500,000
" other quarters,	2,000,000
Total,	$10,600,000

The returns from Chili are in—

Copper and copper ore,	$2,000,000
Bullion,	1,800,000
Hides, wheat, hemp, wool,	700,000
Bullion and dollars, received in payment for goods sold for other ports, and transported to Valparaiso, for United States and Europe,	1,700,000
Total,	$6,200,000

The revenue of the government is largest from commerce:

The custom-house receipts are fully	$1,000,000
Tobacco and wines, monopolies of government,	400,000
Diezmos, or tithes,	600,000
Alcavales, or internal sources of revenue,	200,000
Making a total of	$2,200,000

The ordinary expenditure is about $1,800,000.

The number of foreign vessels employed in the trade is about two hundred and seventy, the same vessels arriving generally twice. They are of the following nations:

English,	90
American,	80
French,	70
Hamburg, Dutch, and Sardinian,	20
Mexico, Colombia, and Sandwich Islands,	10
Total,	270

The population of Chili may be estimated at one million two hundred thousand.

Santiago contains about sixty thousand inhabitants, and is one of the few South American capitals, perhaps the only one, that is increasing in wealth and population. It has various private seminaries for both sexes, a national institute or college, on a liberal footing, an extensive hospital, a medical college, and a military academy. The Congress meets on the 1st of June, every year, when the President delivers his message.

Valparaiso numbers thirty thousand inhabitants, and is one of the most flourishing seaports in the world. Its population has quintupled within the last twenty years, and it is rapidly advancing in every improvement, growing out of an increasing foreign commerce, and the enterprise of its inhabitants, fostered and encouraged as they are by government.

The mining districts are to the north, and the grain country to the south. Extensive flour-mills are now at work in Concepcion and its neighbourhood: the machinery is brought from the United States.

The recognised internal national debt is about $2,000,000, of which sum $800,000 is consolidated, bearing an annual interest of from two to six per cent. The government was about to consolidate the remainder, when their attention was called to other expenses abroad. The foreign debt is a loan from England, taken in 1822, of £1,000,000, with the interest now due, will not fall far short of $8,000,000.

There is very little variation in the climate. During what is called the winter, when the rains prevail, between the 1st of May and the 1st of September, the thermometer occasionally falls for a few hours to 52°, but the mean of it throughout the year, at mid-day, would be 65°. During the dry season, from September to May, the thermometer at times reaches 78° to 80°. In the evening and morning, it is at 60°.

Fruits are abundant in their season: apples, pears, apricots, nectarines, plums, peaches, cherries, &c.; figs, grapes, strawberries, oranges, limes, and every variety of vegetable.

The present administration is composed of

General Joaquim Prieto, President: term of office five years; eligible for a second, but not a third successive term.

Don Joaquim Torconal, Minister of Foreign Relations, and Acting Minister of the Hacienda, or Treasury.

Don Ramen Cavareda, Minister of War and Marine.

Don Mariano Egaño, Minister of the Interior and Justice.

EXECUTIVE COUNCIL.

The President of the Supreme Court of Justice,
The President of the High Court of Appeals,
The Reverend Bishop of Santiago, and Apostolic Vicar,
A General of Division,
The Minister of the Estanco, or Government Monopolies,
Two Ex-Ministers,
Two Judges, and
A Secretary of the Council.

THE SENATE

Consists of nineteen members, elected for five years, representing ten provinces.

THE HOUSE OF DEPUTIES

Consists of eighty-two members, elected for three years, representing thirty-five departments.

Foreigners require ten years' residence to obtain citizenship, if unmarried; six years, if married; three years, if married to Chilenos.

According to present calculation, the militia force of the republic reaches forty-five thousand: forty battalions of infantry, eighty squadrons of cavalry, and eleven companies of artillery.

THE ARMY,

Agreeably to the constitution, in time of peace consists of three thousand men: eight companies of foot and horse-artillery, two regiments of cavalry, and three battalions of infantry.

OFFICERS.

One Major-General,
Eight Colonels,
Twenty Lieutenant-Colonels,
Twenty-five Majors,
Thirty-four Captains,
Nine Adjutants,
Twenty-one Lieutenants,
Sixteen Sub-Lieutenants,
Two Surgeons-in-chief.

THE NAVY

Consists of the Brig Achilles, twenty guns; Schooner Colocolo, eight guns.

OFFICERS.

One Post-Captain,
Two Commanders,
One Lieutenant of Marines,
Three Pursers.

The late war with Peru has increased both the army and navy to

the following, in round numbers: eight thousand troops, six thousand of whom are still in Peru, but about to return; two thousand in Chili, with officers complete, all under the command of General Bulnes, nephew of the President.

The navy, increased by capture and purchase, consists of, and now in service, four ships, two brigs, two schooners, and a new forty-four gun frigate, expected daily from France.

During the time of our visit, June, 1839, the President, in his message, resigned the extraordinary powers conferred upon him, and recommended a reduction of the army to a peace establishment. Since that time he has been succeeded by his nephew, General Bulnes, who from all accounts retains the high reputation and popularity he gained in Peru.

From G. G. Hobson, Esq., United States' Consul at Valparaiso, and our countrymen resident there, we received every kindness and assistance, and from them we derived much information respecting the country. To the former I feel myself under many obligations for his great kindnesses, and the attention he gave to our business, the warm interest he took in the Expedition, and the manner in which he forwarded our views, and aided in procuring the necessary supplies. To him I feel bound to acknowledge my indebtedness for much valuable information, and the many agreeable hours spent in his family will long be remembered. He not only stands deservedly high with our countrymen, but has the respect and high consideration of the Chilian government. An American cannot but feel proud of such a representative abroad.

Our departure from Valparaiso was delayed for some days, owing to the non-arrival of the Sea-Gull, and the prevalence of north winds and calms, together with fogs. These often prevent vessels from sailing in the winter season.

During this time, one morning as the fogs lifted, a brig was discovered in a dangerous situation near the beach of Concon; boats were immediately despatched to her relief; she proved to be the English brig Superior; the master was found dead drunk on his cabin-floor! She was towed to the anchorage, and placed in safety.

Lieutenant Craven was left at Valparaiso, to take command of the Sea-Gull when she should arrive. After a delay there of some months, he joined the Pacific Squadron, and was transferred to the Schooner Boxer, Lieutenant-Commandant Nicholson, which vessel made strict search for the Sea-Gull in all the places she could have possibly met with disaster, in conformity to the orders of Captain Clack, then in command of the Pacific Squadron.

I cannot resist the opportunity when speaking of Lieutenant Craven,

to refer to his praiseworthy conduct in being instrumental in saving the crew of the Chilian vessel of war, the Monteguedo, that came near being lost. By his exertions, seconded as they were by the officers of H. B. M. ship Fly, they were rescued from a watery grave. It gave me great pleasure some time afterwards to receive the highly complimentary notice of it by the Hon. J. K. Paulding, then Secretary of the Navy, which will be found included in Appendix XXXIV.

On the 17th of May, the United States' ship Falmouth, Captain M'Keever, arrived from Callao; and it is with much satisfaction and pleasure I refer to my meeting and acquaintance with this officer, whose liberal views, and the aid rendered the Expedition, were of essential service in forwarding our duties. The manner in which the aid was given, rendered it doubly welcome.

As before mentioned, the Flying-Fish arrived on the 19th, having left Orange Harbour on the 28th of April, in company with the Sea-Gull. At midnight, the Sea-Gull was last seen. Shortly afterwards, it began to blow in strong squalls, and rapidly increased to a gale; by half-past eight of the 29th, it was "blowing furiously." At one o'clock, False Cape Horn was made under the lee, when Passed Midshipman Knox determined to run for a harbour. At 4 P. M. they anchored under the south point of Scapenham Bay, where they dragged their anchors, and were obliged to remove to Orange Bay. There they anchored, and rode out the remainder of the gale, which lasted with violence until the morning of the 1st of May, on which day they again took their departure, and shortly afterwards fell in with a whaler, who seemed not a little surprised to find a New York pilot-boat off the Cape, and to have an interrogatory put to him, to know if he wanted a Cape pilot.

Although I felt some uneasiness about the Sea-Gull, I did not apprehend that she had met with accident. The time that has since elapsed, and the careful search that was made, leaves no doubt of her loss, and a strong belief that all on board perished in that gale. Nothing since that time has been heard of her. How, or in what way, disaster happened to her, it is impossible to conjecture. I had the greatest confidence in the officers who had charge of her; they were both well acquainted with the management of the vessel. Their loss and that of the vessel, were a great disadvantage to the Expedition, which was felt by me during the remainder of the cruise, these vessels being well calculated for the southern seas, particularly in the low latitudes, though much exposed in boisterous weather.

They were principally intended to be engaged with the boats in surveying operations, and were well adapted to that service.

Messrs. Reid and Bacon were among the most promising young officers in the squadron, and I was extremely well satisfied with the performance of their duty in the vessel. The crew consisted of fifteen persons.

Passed Midshipman James W. E. Reid was the son of the late Governor Reid of Florida. He was a native of Georgia, and entered the service in September, 1831. He was ordered to the Exploring Expedition in 1837, and appointed to the command of the Sea-Gull, one of the tenders attached to the Expedition, previous to sailing, in August, 1838.

Passed Midshipman Frederick A. Bacon, entered the service in May, 1832. He was a native of the State of Connecticut, where his highly respectable relatives reside. He joined the Expedition in 1838, and was attached to the Sea-Gull, previous to leaving the United States.

Both of these young officers brought with them into the Expedition a high character, and, during the short period which they were attached to it, they were distinguished for their devotedness to the arduous service in which we were engaged. Their deportment was that of ardent and zealous officers, and of upright and correct gentlemen.

Mr. Bacon left a widow and one child.

In the family of Mr. Reid there has been a remarkable fatality during our absence. His respectable father, the Governor of Florida, and three or four other members of his family, have since died.

During our stay at Valparaiso, the Chilian army was daily expected to arrive from Peru, and all were rejoicing over its success. All opposition to the existing administration had died away. The manner in which the government of General Prieto had carried through its plans, both of war and peace, had met with the approbation of all parties. One of the first acts of the government was to restore to their ranks, Generals Pinto, Borgono, and others, whose conduct had been extremely praiseworthy, though opposed to the government for the last eight years. They, although believing themselves ill used by it, discouraged all attempts at revolution, preferring to suffer themselves, rather than be instrumental in producing changes. Attention was now paid to the building of custom-houses, and other public works at Valparaiso, and elsewhere. The whole seemed to have given a fresh impulse to every thing in Chili. Those who had been at all doubtful of the stability of the government, lost their fears, and became its warmest supporters, while happiness and joy seemed to reign every where.

The Congress met on the 1st of June, when the President delivered

his annual message, resigning the extraordinary powers with which he had been clothed in January, 1837. All Chili will bear testimony, foreigners as well as native born, that in no one instance has he abused them, but so conducted himself, and his administration, as to entitle him to the thanks and rewards of a grateful country.

Chili, with such rulers, and so moderate and energetic a government, must rise rapidly in the scale of nations.

OX-CART.

CHAPTER XI.

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CHAPTER XI.

POLITICAL HISTORY OF CHILI.

1839.

Of the early political history of Chili, we found it difficult to obtain any correct information. There is no publication existing at this date, which furnishes any satisfactory account of the republic in its first struggles to establish itself.

Nearly all the principal actors in its busy scenes are yet living, and not so advanced in age, but they entertain hopes of a change from day to day, that may restore them to power and importance. These, together with the factions that were connected with them, watch with anxiety every turn of public opinion; and with one or the other of them, most of the educated Chilians, who alone are capable of giving an account, are more or less identified.

For this reason, only partial statements can be obtained from any of them. Those who keep aloof from party, are too timid to express any opinion on political subjects, as it might involve them in difficulty. The few foreigners whose long residence in the country would enable them to furnish facts, are so biassed by their prejudices towards different administrations, that no dependence can be placed upon their statements. The inequality of rule of the Chilian administrations makes it difficult to follow their history, and one is left to the barren sources of information afforded by government proclamations, and the official reports of the day, always more or less erroneous and exaggerated, in favour of the ruling party. Under these difficulties, it will not be surprising if the following outline of its history for the last twenty years, should in a few particulars be erroneous; it is, however, believed to be correct, having been drawn from sources that are most to be relied on and entitled to credit, and that were at the time attainable.

After the battle of Chacabuco and Maypo, in which O'Higgins

commanded, he was unanimously proclaimed Supreme Director of Chili, in April, 1817. He continued to fill the situation until 1823, when, in consequence of his allowing great abuses to exist in the subordinate branches of government, and not listening to the respectful remonstrances sent him from all quarters of the country, a meeting of the principal inhabitants of the capital and neighbourhood took place at the town hall.

The subject was discussed freely, and his deposition was determined upon. It was agreed, however, to notify him, for few men were more esteemed than O'Higgins. He received the commission courteously, and when satisfied that they really expressed the voice of the people, he without hesitation resigned his power, and departed for Valparaiso, with the intention of proceeding to Peru. A council of state was named by the assembly at Santiago, composed of three distinguished citizens, until the supreme power could be disposed of.

When O'Higgins arrived in Valparaiso, he found General Ramon Freyre had landed from Concepcion, with three hundred men, having come up from the south to depose him.

Although the latter was no longer in his way, he arrested him on the plea of making him give an account of his administration. This step was not popular. The Junta in Santiago directed his release, and ordered Freyre to furnish him with the necessary passport. This was done in the most complimentary manner; and this distinguished individual, admitted by all to be the first soldier of his country, departed for Peru, without complaint. There honours were showered upon him as testimonials of his worth, and what was far better, the Peruvian government gave him a hacienda.

He still lives in Lima, respected by every one, not having engaged in politics since his retirement from Chili. He has been invited back, but refuses to come. He was succeeded by Ramon Freyre, considered as the champion of liberal institutions, who was named Supreme Director and Captain-General, 31st March, 1823. He resigned in July, 1826, retiring to private life, after a popular rule. His opposition to O'Higgins is justified by its being said that he was left to perish from want of supplies to his troops on the frontier. Though he had been constant in his representations of the fact to O'Higgins, he had been neglected, and was compelled to appear himself and claim attention. There is believed to be much truth in this—O'Higgins having many corrupt creatures about him, who are said to have been the cause of it. Freyre is much respected, though not considered a man of talent. He never mixed in public life after the resignation of his dictatorship, unless when called on as a mediator.

Admiral Blanco was next named President by the Congress then in session, and Don Augustin Azyguine Vice-President. Blanco was one of the vainest of men. Fortunately for the country, he was so much mortified at the opposition shown to some of his fancies, that he resigned, two months and three days after his appointment. The Vice-President succeeded him. Such dissensions, however, prevailed, that he also became disgusted and resigned. Pinto was charged with the presidency, which he exercised from the 5th of May, 1827, till 14th July, 1829, when, on the plea of ill health, he resigned, and went to his estate.

In conformity with a law of 1826, the President of the Senate acted as president until the middle of October, when the elections took place, and General Pinto was returned to the office. During his acting presidency, two military revolts had occurred, and the country was full of factions. As the elections to Congress were considered to have been illegally conducted, the general opposition to its measures was ascribed to that cause. Pinto, therefore, on being elected, informed them, that he would only accept on condition that the Congress should be dissolved, and that new elections, according to the constitution, should take place. They did not concur in this, when he declined occupying the office, and it went begging again. Vicunea, President of the Senate, entered upon the duties of President; the clamours throughout the country increased; the whole population was in movement, a party behind pushing it on. Town meetings were held, and representatives sent to Santiago.

The government refused to receive their committee, and on this being communicated to the meeting, a *junta gobernativa* was appointed, and the country was pronounced to be against the Congress, as an unconstitutional body. Collecting a great number of all classes, they again went to the President's house, and found he had set out in the night, with all his ministers, for Valparaiso. The greatest confusion prevailed in the capital; orders were received at the public offices from the Junta and from the acting President, both claiming to be representatives of the people. In the mean time, the southern army, under General Prieto, approached the city. It had declared for the Junta. The troops in the city, under General Lastra, considered themselves subject to the order of the President for the time. The armies met on the field of Ochagavia, and the first blood in civil war was shed. Both parties claimed the victory, after a sharp contest. A convention was, however, entered into, and Freyre was again called forward, to aid in restoring tranquillity to the country. Nothing satisfactory grew out of this arrangement. Freyre became disgusted

at some non-compliance with his orders as captain-general; but instead of returning to his family, started off to join the party of the President in Valparaiso, setting himself in opposition to the Junta, and calling upon all the officers to join him. Unfortunately, some of the foreign officers did so. He embarked from Coquimbo with troops, and thence proceeded to the south, landed, and was met at Lircai by General Prieto's army, on the 17th April, 1830, when Freyre was entirely defeated. This offence resulted in his banishment. Most of the foreign officers were killed; it is said, after they had surrendered.

The elections now went forward; Don Francesco Tagle was returned President, and Don Tomas Ovalle as Vice-President: both extensive land proprietors and respectable men. The first soon resigned, and Ovalle exercised the honour but a short time, dying soon after his accession. The President of the Senate acted until elections were again held, when General Prieto was returned President, July 14th, 1831, and continued to hold the office at the time of our visit.

It appears throughout the history of the different administrations which have ruled the country since its separation from Spain, that all have been directed by a common spirit of advancement to the country. All their decrees prove this, and under any one of them, had they retained power but a few successive years, it would have prospered. As the people of Chili (that is to say, the mass of the population,) are proverbial for their apathy, and disposed to submit to authority without questioning its origin, the main error of the early administrations was their extensive lenity towards political offenders, whose turbulent spirit and restless ambition no clemency checked. The impunity with which such disorganizers returned to their intrigues after repeated pardons, and the too liberal, or, more properly speaking, visionary schemes of government, no doubt operated to produce the sudden and frequent changes of government, before any one of them had had time to mature plans of improvement or organize a system of legislation, or a mode for the proper administration of laws. A want of energy and resolution of purpose encouraged factions to hope for success in their attempts to gain the ascendency. Imaginary abuses were charged home against each successive ruler, and the country was a prey to convulsions. This state of affairs prevailed in a greater or less degree till 1831, when the present administration came into power. Its course was totally different from its predecessors. It adopted at once the most energetic measures to establish order; introduced a necessary severity, which produced a hue and cry against it, in the country. But it was not diverted from its purpose. It went on reforming abuses, nipping revolution in its bud, and banishing the most refractory; by a

salutary terror awed the many factions, and pursued vigorously its career of improvement in every branch of government. No one felt disposed to give it credit. All its acts were ascribed to one or other of the former parties. Every one spoke of them as being proposed, projected, or introduced by O'Higgins, Freyre, or Pinto, forgetting that their good intentions were never carried out, and that it was the abuses permitted by them that led to civil war. The present administration proved itself fit to rule. It wielded its power energetically but beneficially. Its vigilance never slept; and the parties which occasionally showed symptoms of movement, have at last made up their minds to come into the fold of good citizens.

The actual president at the time of our visit, was General Joaquim Prieto, a man of umblemished private character, full of benevolence, but who, no doubt, had he been left to the direction of his own feelings and judgment, at several periods of his official career, would by his mistaken lenity have brought upon his government the fate of all the preceding ones. Fortunately for the lovers of order, he had for several years to aid him, as minister of war and the interior, Diego Portales, one of those master spirits a country but rarely produces; a man whose early life was engaged in commerce, but who, in the progress of revolutions, evincing more than ordinary ability, became a prominent politician, and eventually one of the leading men of the country. From his resolute and unbending temper, he was permitted to become the head of a party, and soon gained such an ascendency, that they abandoned themselves to his guidance. He might have obtained the presidency, had ordinary ambition directed him; but, impelled by a more noble one, he chose to attach himself to the administration as one of its ministers, in order, as subsequent events proved, that he might be better able to carry out the plans he meditated. He possessed a resolution in his political career which never swerved from what he conceived his duty, or what he thought the interests of his country required. He had the unyielding temper of a reformer; and never was one more wanted in any country. He recommended the establishment of a militia system, with a view to check every future military interference in the government; and when it was opposed, on the ground that it would only endanger the peace of the country to place arms in the hands of the people, he answered, "No! depend upon it, the only way to secure permanent order, is to create a power in the people which may be enlisted on their side; and if this should declare against the government, it would be evidence enough that it ought no longer to rule, for such a power should consist of the best portion of the population of the country. The first object

must be to counteract military influence; for it too frequently happens amongst us, that when we make a colonel, and give him a regiment, his aspirations soon extend to supreme command."

His counsel was listened to: a militia system was organized; the army was reduced; numerous generals and other officers were struck off the list; the number of civil officers in the various departments was diminished, salaries cut down, and the most rigid economy observed in every branch of the government. Setting an example of unwearied industry in the discharge of his duties, he exacted from those under him a strict performance of theirs. He corrected abuses which had the countenance of time for their practice; he aroused his countrymen from their indolence; corruption ceased, persons were selected to fill office from their fitness, and not, as formerly, from family influence. His militia system worked admirably; it produced a feeling of order among a population notoriously irregular in their private habits and domestic economy; it became a national guard, exercising a certain kind of police over the whole land. Indeed, all his energies were called into play, to improve and advance his country; roads were planned to open communications to the coast, from sections abounding in agricultural wealth, but remote from the seaboard. He set about raising the public credit by husbanding the revenue, so as to enable it, after consolidating domestic and foreign debt, to appropriate a certain amount, first towards the periodical payments on account of interest, and then to effect an arrangement with the English-bond-holders. For the latter purpose, an agent was named to proceed to England.

To accomplish such radical changes great perseverance and firmness were requisite, and these qualities eminently characterized Portales. It is surprising how well he adapted his march to the actual state of the country, and its prejudices of education. He supported the clergy, to obtain their instrumentality as a moral power to strengthen the government, knowing that otherwise they would, as they frequently had, become its most formidable opponents. All this created much discontent among many speculative politicians, who fancied they could establish a refined system of government over an uneducated and prejudiced mass of men like the Chilians; a population that had but a few years emerged from a political state little different from that of Europe in the middle ages, whose predilections were deeply rooted, whose habits only change by an increasing intercourse with nations more enlightened than themselves, and who gradually and almost imperceptibly yield to such an influence.

This government came into power after military rule had been in possession of authority almost ever since the nation became indepen-

dent. It had been the custom to consult military men on every change of government; the rivalry of generals consequently kept up a constant revolutionary propensity. A government, to establish civil rule supreme in the land, and in order to have its laws obeyed, would be obliged to exercise more severity with it than pre-existing circumstances had called for. Portales incurred the sole odium of this severity. His activity and energy were ever present and before the public. He had a difficult task to perform in reconciling jarring interests, and pushing out this system of reform, but he did it fearlessly. No selfish feeling seemed to actuate him. His enemies admit that his disinterestedness was extraordinary, and that neither himself nor his family were benefited by his public employment. The remains of that unquiet military spirit, the growth of revolution, would occasionally show itself; but the government instantly crushed it, and sent the offenders out of the country. A good understanding was sought with foreign powers. A treaty was effected with Mexico, and one with the United States; and a mission to accomplish one with Peru, sent up by President Orbejoso, was met with confidence. Unfortunately, when the ratification of the latter was about being exchanged, a military revolt broke out in Peru, headed by a Colonel Salaverry, which succeeded in driving the legal government from Lima, and established one there of which Salaverry declared himself supreme chief.

The Chilian government, too anxious to complete the treaty, which was advantageous to the two countries, sent it to Peru, and exchanged ratifications with Salaverry, who was at the time acknowledged to be the de facto ruler, as far as decrees and possession of the capital went. In this view of the case, Chili had an undoubted right to conclude the treaty, and to expect that it would be observed. The ratification of the treaty by Salaverry was followed by his sending a minister to Chili, although the ambassador of the former government (Orbejoso's) was still there. This was the germ from which grew the misunderstanding that occurred on the restoration of Orbejoso's government, which was effected through the intervention of the President of Bolivia, General Santa Cruz, who had been called upon by Orbejoso for assistance. This resulted in the defeat of Salaverry, the establishment of the Peru-Bolivian Confederation, and the naming of Santa Cruz as Supreme Protector, for life, by assemblies convoked by him, and the appointment of Orbejoso as President of North Peru.

While these matters, however, were in progress, Orbejoso, who had returned to Lima after the battle of Socabaya, immediately on his arrival annulled the treaty with Chili, with no other notice to the latter government than the public decree, by which she was informed

that four months were allowed her to renew it or not, otherwise it would be of no effect.

Chili took umbrage at this abrupt mode of proceeding, and allowed the time to pass, when both governments restored the former retaliatory duties on their respective products.

Santa Cruz framed a new commercial code for Peru, and among its articles, was one imposing double duties on all vessels touching at any Chilian port, before going to Peru. This measure was odious to Chili, and was considered as evincing unfriendly feelings. Whilst Chili was in the full tide of prosperity, and attending to her own internal regulations, the administration, satisfied that all was quiet at home, appears to have been utterly regardless of the course things were taking in Peru. President Prieto at this time was re-elected for a second term, upon which General Ramon Freyre, the former director of Chili, but for some years banished the country, and living in Peru, set out with a few other exiled Chilian officers, on a revolutionary adventure to Chili. Embarking in two Peruvian government vessels, hired from Orbejoso ostensibly for a trading voyage to Central America, his real intention was to proceed to the south of Chili, and make a descent upon the coast. He entertained the expectation of being joined by the old military, and other dissatisfied persons, and was in hopes of finally establishing himself again in power. Some few days subsequently to Freyre's departure from Lima, the Chilian consul-general hearing of it, despatched a fast-sailing vessel to apprise his government. The vessel had a very short passage, and the intelligence took the government entirely by surprise. They were wholly unprepared for an attack from any quarter. Their only armed vessel was a small schooner, and this was employed at the time to bring the electoral returns from Chiloe. The intelligence, however, caused government no alarm. With a promptitude characteristic of Portales' system, which was now fairly established, a dismantled brig-of-war was rigged, a crew shipped, and made ready for sea in four days. Gun-boats were armed, and every precaution taken to guard against surprise. At the same time the government received tenders of service from people of property and influence throughout the whole republic, and few felt any doubts that the result of the affair would be in favour of the government.

Soon after, the largest of Freyre's vessels, with some of his best officers on board, was brought in by her crew, and delivered up. It was ascertained that the rendezvous was to be Chiloe. No time was lost in sending off the prize, with a good equipment, to decoy Freyre, if possible. He was found in possession of Chiloe. The stratagem

was successful, and they returned with him prisoner, and the other vessels as prizes. Thus ended, in the short space of two months, an expedition headed by one who had been the most popular ruler Chili ever had. Though possessing still many friends in the country, he found himself a prisoner and not a voice raised to his rescue. His life was considered forfeited, as he had been banished by the present government, and had come to introduce anew all the horrors of civil war into a peaceful country. The recollection of his distinguished services to the nation in times past, his having with honour to himself and credit to his country filled its highest office, and no doubt some sympathy for his changed situation, obtained for him the clemency of the government. He and his adherents were again banished, and no person connected with him otherwise punished. He was also permitted to see his family frequently during his confinement.

The result of this attempt had the effect of strengthening the administration. People of property and respectability, even of opposite parties, rallied around it: a satisfactory proof that there was a love of order rising, and that the supremacy of civil rule would no longer submit to changes effected by arms.

In the meanwhile, circumstances seemed to justify the belief of the connivance of the Peruvian government in Freyre's plan. It had been notified by the Chilian consul-general, a few hours after the vessels sailed, of the true objects of the voyage, and there was still time to prevent Freyre's success. They shuffled out of the affair, and on learning that the consul-general was despatching a vessel to inform his government, they put an embargo on the port of Callao. The vessels however, had sailed before the order reached the port; on understanding which the embargo was immediately raised.

This was publicly commented on at the time by foreigners in the place, and afforded conclusive evidence that the Peruvian government was concerned in the plot. The Chilian vessels of war, Achilles and Colocolo, the only ones possessed by the government, were despatched suddenly on secret service. A confidential agent accompanied them. They went to Callao, and seized upon three Peruvian vessels of war lying in the harbour, to take away the only means of offence in the power of a government which had proved itself so unfriendly. This being done, the vessels were taken over to the island of San Lorenzo, and anchored under the guns of the Chilian vessels. The Chilian civil agent demanded explanations respecting Freyre's expedition. Before these were given, great excitement prevailed on shore, at what was conceived to be an outrage against civilized nations; for it was said that the Chilian vessels had entered under the guise of friendship, and

while partaking of the hospitality of a nation at peace with their own had basely taken advantage of it to insult the country. The Chilian consul-general, when the news first reached Lima, was subjected to a short arrest. Finally, matters settled down, and the parties agreed to discuss the subjects of complaint on board the English sloop-of-war Talbot. Santa Cruz sent one of his principal officers, and a convention was agreed upon for the suspension of hostilities on both sides for the term of four months. The Peruvian vessels were to remain in possession of the Chilians, and no warlike preparations during the time were to be made by either party. Santa Cruz disavowed any participation in Freyre's plans, and expressed his willingness to pay Chili the expenses of suppressing the attempt. He also bound himself to the performance of his part of the convention, leaving the Chilian agent subject to the approbation of his government, and assured him of his earnest desire for a good understanding with Chili.

The vessels returned to Chili, a diplomatic agent of Santa Cruz accompanying them. The Chilian government refused to ratify the convention when informed of it, and proceeded in the most active preparations for fitting out all the captured Peruvian vessels. At this time it might have dictated any terms to Santa Cruz, who was anxious to secure his newly-acquired power. Chili, however, had no confidence in him, and prepared for the coming struggle. Santa Cruz's minister returned to Peru. He was followed by the Chilian fleet, having a high diplomatic agent on board, with the government *sine qua non*, viz., the abandonment of the Confederation, and the restoration of the independent sovereignties of Peru and Bolivia. Santa Cruz refused to receive a minister attended by an armed force, which had the appearance of a menace. In vain did the Chilian minister offer to send them away, and remain in the smallest vessel of the squadron, saying the latter was merely to guard against a repetition of Freyre's expedition. Nothing was done. The Chilian minister returned home, and Chili then declared war against the Confederation, on the 12th of December, 1836. Freyre's attempt had been crushed in August, 1836.

Chili became sensible, too late, of her error in not protesting at first against the armed interference of Santa Cruz in the affairs of Peru; by not doing which she tacitly assented, and thus encouraged him. But, occupied with her internal concerns, she heeded little what was passing around her, and had not Freyre's expedition been fitted out in Peru, Santa Cruz's plans of government would have been unmolested. She felt too late that no confidence could be placed in her new neighbours. Determined, therefore, on his downfall, an expedition against him was planned, composed of naval and land forces; and numerous banished

Peruvians living in Chili were permitted to join, who formed themselves into a separate body, under General Lafuente, a distinguished Peruvian revolutionist. The first ill effects of a revival of a military spirit in Chili were now experienced. As before mentioned, one of the reforms of the government was the reduction of the army to a number barely sufficient to protect the southern frontier against the Indians. To create a force, therefore, it became necessary to raise recruits in every direction. Congress being in session, granted extraordinary powers to the President,—a very necessary step to give effect to executive decrees.

The following is a translation of a decree of the President, issued by Portales, as Minister of the Interior, at the breaking out of the war:

Department of the Interior.

In consequence of the power that the 43d and 82d articles of the Constitution have conferred upon me, I have well considered and approved the following resolution of the National Congress.

1st. He who has been condemned to remain in a particular part of the Republic, or exiled from it by the judicial sentence, and for the crime of sedition, conspiracy, and riot, will suffer death if he breaks his confinement or exile.

2d. In whatever part of the Republic any one of the criminals included in the foregoing article may be apprehended, without the limits that have been assigned to him, the authorities will seize and shoot him, within twenty-four hours, without any other proofs than may be necessary to identify the person, and without suffering any appeal to a higher authority.

3d. The present law will begin to act, respecting all those who are expelled the Republic for the crimes which are expressed in the first article.

On this account I direct it to be promulgated, and to take effect in all parts, as a law of the state.

(Signed) Prieto.

Diego Portales.

Santiago, January 28th, 1837.

Inasmuch as the National Congress has declared the state to be in actual war with Peru, and in consequence clothed the President of the Republic with all the necessary powers that his prudence may find necessary for the exigency of the state, without any other limitation than that he shall not condemn or give punishment of his own will, but leave these to be judged by the established tribunals, or those which this present government may hereafter establish. In consequence of

the authority conferred upon me, I promulgate, by the articles forty-third and eighty-second of the Constitution, sanction, approve, and order the foregoing decree to be made public, through the press.

PRIETO.

DIEGO PORTALES.

Santiago, 31st January, 1837.

This decree did not fail to renew the complaints of old parties against the government as despotic, &c. To carry on the war, part of two battalions of a veteran regiment from the south arrived at Valparaiso, under the command of Colonel Vidaurre, a brave and distinguished officer. They were ordered to Quillota, where recruits were to join them, until the regiment should be full, and where they were to be drilled and disciplined, for embarkation. Vidaurre was appointed head of the staff of the army, under Admiral Blanco Encalada, commander-in-chief. A regiment of one thousand four hundred men was soon completed, and reported to be in fine order. The navy, composed of seven vessels, was ready to sail. At this time Portales, being minister of war, came to Valparaiso, to hasten the departure of the expedition, and to give his personal inspection to its materiel. Vidaurre was his *protégé*, and an invitation to a ball, said to be about being given in Quillota, sent by Vidaurre, was accepted by Portales, who intended going there to examine the condition of the troops. At the same time, he determined on carrying Vidaurre his epaulettes and promotion as brigadier and chief of the staff. On the afternoon of the 3d of June, 1836, Vidaurre ordered the troops into the square for Portales' reception. When all were assembled, Vidaurre made a signal; some soldiers advanced, surrounded and seized Portales, who was not allowed to say a word, but was hurried to prison, and heavy irons put on him. An *acta*, or declaration, was drawn up and signed by about forty officers, all subalterns, containing the usual phraseology of such documents, about tyranny, injustice, suffering country, &c. A servant of Portales escaped unseen, and brought the astounding intelligence to Valparaiso, soon after midnight, creating the greatest consternation. It was naturally supposed that an officer of Vidaurre's energy and character would push for Valparaiso without delay. If he had done so, he could have taken it. Alarm-guns were fired, and before daylight the militia were under arms, and not long after the squadron, consisting of some seven vessels, were hauled towards the Almendral. In the course of the day, some few hundred men, sent by Vidaurre, were met and repulsed by a body of militia. Not long after, a flag of truce was sent to the town, demanding the delivery of the "Port" and vessels, threatening, in the event of a refusal, to execute Portales, and

in case the town was taken, to give it up to plunder, besides shooting every officer found in arms. It is said that Vidaurre offered to save Portales' life if he would write an order for the surrender of the town. This he refused with indignation. The authorities, nevertheless, remained firm, and allowed the flag to return. The greatest anxiety prevailed in the Port, as a night-attack was apprehended, and it was feared the militia, new to warfare, would give way, or perhaps join the revolters. The measures taken to defend Valparaiso were admirable. No confusion was observed, and the greatest alacrity was manifested by every officer of the government, and citizens, to aid the cause of order. The foreign merchants, however, sent their books, papers, and money, on board the English frigate Blonde, the only foreign vessel of war in port. Vidaurre came on, confident of success. He encountered the militia, at the entrance of the Port, about two o'clock in the morning, and met with so warm a reception that he was compelled to fall back. The militia pushed on, directed by Admiral Blanco. The governor, Colonel Vidaurre, a cousin of the revolutionist chief, followed him up so closely that it ended in a complete defeat, Vidaurre's troops scattering themselves in every direction, himself flying with a few officers. When the fate of his troops was decided, his step-son, who was in the rear, where Portales was in a gig, heavily ironed, had him taken out, with his secretary, and shot. Portales not being killed by the first fire, was bayonetted, with savage brutality, in various parts of his body, which they left in the road, covered with thirty-five wounds. The pursuit continued throughout the day; the soldiers were left without officers, and gradually returned to their old quarters, where they were incorporated with other regiments. Some days elapsed before Vidaurre and his accomplices were taken. Although a feeling of horror pervaded the community at the fate of Portales, yet the most perfect order and confidence continued. Neither on his examination, nor that of his officers, did it appear that the movement had been encouraged by any party in the country. In fact, it could only be inferred that he was ambitious to play the part of a second Salaverry.

Order triumphed most completely. The militia had arrayed itself on its side, and increased confidence was felt in the government, though there were not wanting some who predicted its speedy downfall, now that it was deprived of its most efficient member. Vidaurre was replaced by a much more respectable person, General Aldunate, a man characterized as the Don Quixote of honour by those less scrupulous than himself. The government gained by this exchange, but the loss sustained in the death of Portales was irreparable. He

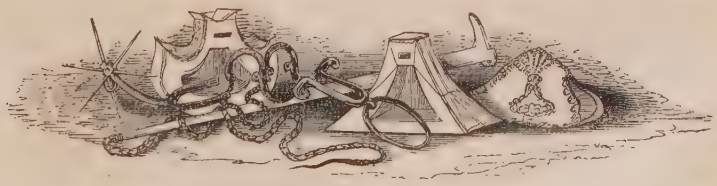
stood alone; he worked for his country; and his fate was most unmerited. Deeply did every true friend of Chili deplore it. He had taught that the civil authority could be made supreme, and he will have one of the most conspicuous places in the history of Chili. He was in the prime of life, about forty-two years of age, unmarried, and at no period were his services more required. His energy, however, seemed to have been imbibed by the whole administration, and no abatement took place in the preparations for war.

Vidaurre and his officers were tried by a court-martial held in Valparaiso, and condemned to be executed. Twelve were shot, the rest were banished. This was the first execution of such a sentence for political offences that had ever occurred in Chili. Some pretended to bode ill from it, but its effects so far have been salutary; and these desperate characters will not be so much inclined to run headlong into revolutionary movements after seeing the fruits of it.

The expedition, composed of three thousand men, finally sailed, and disembarking at Islay, proceeded to Arequipa, the second city of Peru, of which they took possession. Santa Cruz's troops retired to the interior. Lafuente was here proclaimed Supreme Chief, according to prescribed forms in such cases provided, and set about organizing his government, filling offices without a *real* of revenue, or any source from which he could raise any. No disaffected Peruvians joined them, and their situation became very critical, as Santa Cruz was concentrating his forces, and threatened to cut off the communication with their ships. Thus hemmed in, they would have been obliged to surrender at discretion. These advantages were possessed by Santa Cruz, and the Chilians saw no way of escape. Why Santa Cruz should have lost this opportunity to strike a decided blow, is inconceivable. He did, however, waive it, and proposed to treat. Communications passed for some days. Santa Cruz's army augmenting daily, was now double that of the Chilian general, who seemed to have no alternative but submission. Still he put a brave countenance on the affair, and signed at Paucarpata a treaty with Santa Cruz, having previously held a council of war, which was attended by the minister plenipotentiary which the Chilian government had sent with the expedition. There was no voice raised against the treaty. It was honourable to the Chilians, and saved their whole army. Festivities followed, after which the Chilian forces embarked and returned home. Neither the government nor the people were satisfied. Blanco landed secretly, and was received coldly. The President refused to ratify the treaty. It was considered disgraceful, as the object of the war had not been gained, and singularly enough, the war now became popular

with all parties. The army landed in perfect order. Blanco was deprived of his command, and a court-martial ordered. The troops were again sent to Quillota, and the greatest enthusiasm seemed to prevail. A new and more formidable expedition was determined on; and General Bulnes, the President's nephew, who commanded the troops on the frontiers, and was known as a bold dashing officer, was appointed to the command. Many thought the government mad, foresaw forced loans, and all the attendant evils, great financial difficulties, and, eventually, revolution. Still the government moved steadily on. Six thousand men were soon got together, well officered, well equipped, and with a military chest well filled. It is generally believed that the church made a loan to the government for this war, and it is said that it possesses one-eighth of the landed property of the country. This second expedition sailed, confident of success. No loans were asked for by government, nor any funds other than the ordinary revenue used, yet no account remained unpaid. This was and continues to be the marvel of every one. The greatest regularity was observed in all the dealings of the government agents; no complaints of extortion or abuses were heard. The internal affairs of the country went on as if no war existed. Improvements were not neglected; lighthouses built; roads improved; and no interruption took place in the usual operations of government. With this last expedition went General Gamarra, one of the fathers of Peruvian revolution, grown gray in the service. Lafuente went as his adjunct, though he had once made a revolution against him. With these went a host of military leeches, Peruvian exiles, ready to bleed their country to its last gasp. High-sounding words of patriotism, oppressed country, self-devotion, &c., flowed from them in most extravagant terms. From their local information it was expedient for the Chilians to have them, but if considered as a constituent part of the army, they were like fire-brands. Bulnes, a plain blunt soldier, it was thought would use no ceremony with any of them if he found them troublesome, which those who knew their characters thought would be the case.

The remaining part of the operations of the Chilian army in Peru, will be treated of when I give the sketch of the history of that country.



STIRRUPS, SPURS, ETC., OF CHILI.

CHAPTER XII.

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CHAPTER XII.

PERU.

1839.

On the 26th of May, the Porpoise sailed for Callao, in order that some repairs might be made on her, which our time here did not admit of. At Valparaiso the weather was extremely unfavourable for astronomical observations. I had been in great hopes of being able to obtain a series of moon culminating stars, and occultations, but no opportunity occurred, so that I had to content myself with those for rating the chronometers, and to connect this port with Callao. The longitude adopted for Fort San Antonio, was 71° 39′ 20″ W., which is the last determination of it by King and Fitzroy.

On the 4th, we made an attempt to get out of the bay, but were obliged again to cast anchor. At this season of the year, light northerly winds usually prevail, and a heavy swell frequently sets in the bay, making the roadstead very uncomfortable, and at times dangerous. The vessels are too much crowded, and the regulations of the port are not sufficiently attended to.

I was not a little amused with the master of a Hamburg barque, who dropped his anchor so as to foul the berth of my ship, and when he brought up, swung close alongside. He seemed perfectly satisfied with his situation, and apparently knew little about his business, showing all the doggedness of his countrymen. The weather looking threatening, I sent him word to move, stating that in case of a change of wind, he would be greatly injured. He quietly replied that his vessel was made of teak, and that his underwriters or my government would pay his damages, and that he could stand a good deal of grinding! Without more ado, I sent an officer and men, and put him at once out of my way.

On the 6th, we had a breeze from the southward and eastward, and

immediately got under way with the squadron, and succeeded in making an offing. As we opened the land to the southward, my view and thoughts wandered in that direction, hoping that still, and at the last moment, the missing tender might heave in sight. But no white speck was seen, nor any thing that could cause a ray of hope that she might yet be in existence; and my fears foreboded what has since proved too true,—she and her crew had perished.

On the second day after leaving Valparaiso, we had a fresh gale from the northward, accompanied with much sea. During the night, in thick weather, we lost sight of the Peacock and Flying-Fish. On the 9th we got beyond the wind, which blows along the coast from the northward, and our weather improved, exchanging fog, rain, mist, and contrary winds, for clear weather, and winds from the southwest.

The current was found west-by-north, nine miles in twenty-four hours. The wind, however, continued variable. On the 12th, in longitude 74° 40′ W., latitude 28° 34′ S., we took the trades, but they proved very unsteady. They were very strong for a few hours, and then again light and almost calm, with squally appearances all around the horizon. The sea was quite smooth, and the weather pleasant. During the days that the trade-winds were not strong, we usually had the wind to vary to the northward and eastward for a few hours.

On the morning of the 19th, the zodiacal light was quite brilliant, resembling the aurora borealis, but without its radiating, vacillating, and transitory appearance, and having the form of a distinct narrow cone. At its base it was 20°; the apex could not be ascertained, on account of the intervention of clouds. As the dawn increased, the cone grew broader, until it was lost in the daylight. Its whole duration was about forty-five minutes. The stars were seen through it, as though covered with a transparent veil. On the same day, we found the temperature at bottom, in eighty-three fathoms, 57°, whilst at the surface it was 63°. We were then abreast of Point Sola, and San Lorenzo bore to the north, distant twenty-five miles.

On the 20th, in the evening, we passed through the Bouqueron Passage, having got several casts of the lead in three and a quarter fathoms water; and by the assistance of the lights of the other vessels, anchored near the rest of the squadron at San Lorenzo, after a passage of thirteen days. We found them all well, and proceeding rapidly with their repairs. The Peacock and Flying-Fish arrived two days before us. We found the current generally with us, but not strong. The temperature of the water varied at sea from 58·27° to 66·5°; that of the air, from 57·3° to 63·04°: a rise of eight degrees in the former and six degrees in the latter, in twenty-one degrees of latitude.

On receiving the reports of the commanders of the different vessels, active operations were at once begun to refit, replenish our stores, and complete our duties. The necessary changes in officers and men were made, in consequence of my determination to send the Relief home. This I resolved to do on several accounts. I have stated that from the first I found her ill-adapted to the service; her sailing I saw would retard all my operations, and be a constant source of anxiety to me; and I felt that I already had objects enough without her to occupy and engross my attention. The expense was another consideration, which I conceived myself unauthorized to subject the government to, particularly as I found on calculation, that for one-tenth of the sum it would cost to keep her, I could send our stores and provisions to any part of the Pacific.

We found it necessary to have the Relief smoked, in order to destroy the rats with which she was infested, to save our stores from further damage. During this time the repairs of the Porpoise had been completed, and the usual observations for rating our chronometers, and with the magnetic instruments, were made on shore; and such officers as could be spared allowed to visit Lima. The naturalists were also busy in their several departments. We remained at San Lorenzo ten days, during which time its three highest points were measured with barometers at the same time. The result gave eight hundred and ninety-six feet for the southern, nine hundred and twenty for the middle, and twelve hundred and eighty-four for the northern summit. Upon the latter the clouds generally rest, and it is the only place on the island where vegetation is enabled to exist. The others are all barren sandy hills. It is said that the only plant which has been cultivated is the potato, and that only on the north peak. This becomes possible there from the moisture of the clouds, and their shielding it from the hot sun.

The geological structure of the island is principally composed of limestone, clay, and slate. It presents a beautiful stratification. Gypsum is found in some places between the strata, and crystals of selenite are met with in one or two localities. Quantities of shell-fish are found on the shore, and the waters abound with excellent fish.

The burying-ground is the only object of interest here. The graves are covered with white shells, and a white board, on which is inscribed the name, &c. They appear to be mostly of Englishmen and Americans, and it would seem that the mortality had been great. But when one comes to consider the large number of men-of-war which have been lying in the bay, and the period of time elapsed, the number of interments do not seem large.

It was with much pleasure we greeted the arrival of the Falmouth, Captain M'Keever, whose kindness in supplying our wants, and forwarding our operations, we again experienced. The essential and timely aid he gave me, in exchanging the launch and first cutter of his ship, for materials to build one, which I had brought from Valparaiso for that purpose, prevented our detention here.

The Falmouth brought from Valparaiso three deserters from the squadron, who had been apprehended by Lieutenant Craven, and from whom I received a report, stating that two of them, Blake and Lester, had been guilty not only of desertion, but that their desertions had been attended with very aggravated circumstances. Just about this time the stores were delivering from the Relief. Among them was a quantity of whiskey for the other vessels. The marines who were placed on duty over the spirit-room as guard, with six persons employed in moving it, got drunk by stealing the liquor, and her whole crew became riotous. The delinquents were ordered on board my ship in confinement. These were court-martial offences, but the duties of the squadron would not permit me to order a court for their trial, without great loss of time and detriment to the service. To let such offences pass with the ordinary punishment of twelve lashes, would have been in the eyes of the crew, to have overlooked their crime altogether. I was, therefore, compelled, in order to preserve order and good discipline, to inflict what I deemed a proper punishment, and ordered them each to receive twenty-four lashes, excepting Blake and Lester, who received thirty-six and forty-one. This was awarding to each about one-tenth of what a court-martial would have inflicted; yet it was such an example as thoroughly convinced the men that they could not offend with impunity. This was, I am well satisfied, considered at the time as little or no punishment for the crimes of which they had been guilty; but I felt satisfied that the prompt and decided manner in which it was administered, would have the desired effect of preserving the proper discipline, and preventing its recurrence. In this I was not disappointed. I should not have made this statement, had it not been that this was the sole charge, out of eleven, spread out into thirty-six specifications, on which a court of thirteen members, after an investigation of three weeks, could find I had transgressed the laws of the navy in the smallest degree. In justification of my course on this occasion, I could not but believe that the following clause of my instructions from the Hon. J. K. Paulding, Secretary of the Navy, ought to have sufficed: "In the prosecution of these long and devious voyages, you will necessarily be placed in situations which cannot be anticipated, and in which sometimes your own judgment and discre-

tion, and at others necessity, must be your guide." Under this I acted. I am fully satisfied that in this case circumstances did occur, which in the language of my instructions did make "necessity my guide," and I fully believe that in so doing I saved the results of the Expedition, the honour of the navy, and the glory of the country.

On the 30th of June, the squadron went over to Callao.

The Bay of Callao is too well known to require much to be said of it. The climate, combined with the prevailing winds, make it a fine harbour. The island of San Lorenzo protects it on the west from the swell of the ocean, but its northern side is entirely exposed; there is no danger to be apprehended from that quarter. A few miles to the north the influence of San Lorenzo ceases; the surf there breaks very heavily up on the beach, and prevents any landing.

The gradual manner in which the extensive plain rises from Callao towards Lima, seems to give a very erroneous idea of the situation of the city. From the bay it is seen quite distinctly, about six miles distant, and does not appear to be elevated; yet I measured the height of Mr. Bartlett's house above the level of the sea by sympiesometer, and found it four hundred and twenty feet. The rise would be scarcely perceptible to a stranger passing over the road, or one who had not a practised eye.

The tide at Callao is small, generally of three and four feet rise. The temperature of the water during our stay was 60°; of the air from 57° to 63°.

Since my visit to Callao in 1821, it had much altered and for the better, notwithstanding the vicissitudes it has gone through since that time. A fine mole has been erected, surrounded by an iron railing. On it is a guard-house, with soldiers lounging about, and some two or three on guard.

The mole affords every convenience for landing from small vessels and boats. The streets of Callao have been made much wider, and the town has a more decent appearance. Water is conducted from the canal to the mole, and a railway takes the goods to the fortress, which is now converted into a depot. This place, the seaport of Lima, must be one of the great resorts of shipping, not only for its safety, but for the convenience of providing supplies. The best idea of its trade will be formed from the number of vessels that frequent it. I have understood that there is generally about the same number as we found in port, namely, forty-two, nine of which were ships of war: five American, two French, one Chilian, and thirty-five Peruvian merchantmen, large and small.

The Castle of Callao has become celebrated in history, and has long

been the key of Peru. Whichever party had it in possession, were considered as the possessors of the country. It is now converted to a better use, viz.: that of a custom-house, and is nearly dismantled. Only five of its beautiful guns remain, out of one hundred and forty-five, which it is said to have mounted. During our visit there the Chilian troops had possession of the country, which they had held since the battle of Yungai. Most of the buildings are undergoing repairs since the late contest.

It is said that the fortress is to be demolished, and thus the peace of Callao will in a great measure be secured.

The principal street of Callao runs parallel with the bay. There are a few tolerably well-built two-story houses on the main street, which is paved. These houses are built of adobes, and have flat roofs, which is no inconvenience here, in consequence of the absence of heavy rains. The interior of the houses is of the commonest kind of work. The partition walls are built of cane, closely laced together. The houses of the common people are of one story, and about ten feet high; some of them have a grated window, but most of them only a doorway and one room. Others are seen that hardly deserve the name of houses, being nothing more than mud walls, with holes covered with a mat, and the same overhead.

The outskirts of Callao deserve mentioning only for their excessive filth; and were it not for the fine climate it would be the hot-bed of pestilence. One feels glad to escape from this neighbourhood.

The donations to the clergy or priests, at two small chapels, are collected on Saturdays from the inhabitants. On the evening of the same day, the devotees of the church, headed by the priest, carry a small portable altar through the streets, decorated with much tinsel, and various-coloured glass lamps, on which is a rude painting of the Virgin. As they walk, they chaunt their prayers.

The market, though there is nothing else remarkable about it, exhibits many of the peculiar customs of the country. It is held in a square of about one and a half acres. The stands for selling meat are placed indiscriminately, or without order. Beef is sold for from four to six cents the pound, is cut in the direction of its fibre, and looks filthy. It is killed on the commons, and the hide, head, and horns are left for the buzzards and dogs. The rest is brought to market, on the backs of donkeys. Chickens are cut up to suit purchasers. Fish and vegetables are abundant, and of good kinds, and good fruit may be had if bespoken. In this case it is brought from Lima. Every thing confirms, on landing, the truth of the geographical adage, "In Peru it never rains." It appears every where dusty and parched up.

We had a good opportunity of visiting the far-famed fortress. It is said to be able to contain ten thousand troops, and from its extent, would appear capable of accommodating that number with ease. What engaged our attention most, was a review of the soldiers of the garrison. They are about eight hundred strong, and every one seemed to be "acting on his own hook," as they are said to have done in the late battle. The officers, instead of swords, carried *cowhides*, about five feet in length, which they applied with earnestness to the men, and indeed, from appearances, they seemed to require it, if they were ever to be changed into soldiers.

The situation of old Callao is still visible under the water, and though an interesting object, becomes a melancholy one, when one thinks of the havoc a few minutes effected. The very foundation seems to have been upturned and shaken to pieces, and the whole submerged by a mighty wave. The wonder is that any one escaped to tell the tale.

Two crosses mark the height to which the sea rose. The upper one, one-third of the way to Lima, indicates the extreme distance to which the water flowed; the lower one marks the place whither the Spanish frigate was carried. I very much doubt the truth of either. I can easily conceive that a great wave would be sufficient to carry a large vessel from her moorings half a mile inland, but I cannot imagine how the water should have reached the height of one hundred and fifty feet at least above the level of the sea, and yet permitted two hundred inhabitants of old Callao to have escaped on the walls of a church which are not half that height.

Outside the walls of the fortress are several large vaults, filled with the dead, in all stages of decay, and on which the vultures were gorging themselves: this was a revolting spectacle. Indeed, it is truly surprising that the higher classes, and those in immediate authority, should not feel the necessity of appearing more civilized in the disposition of their dead. Many are thrown in naked, and covered only with a few inches of sand. Great numbers of skeletons are still seen with pieces of clothing hanging to them. Dogs and vultures in great numbers were every where feeding upon the dead, or standing aloof fairly gorged with their disgusting repast. If any thing is calculated to make a people brutal, and to prevent the inculcation of proper feeling, it is such revolting sights as these.

Callao is said to contain between two and three thousand inhabitants, but this number, from the appearance of the place, seems to be overrated. Several new buildings are going up, which proves, that notwithstanding the times of revolution, they still persist in carrying on improvements. The principal street is about a third of a mile in

length, and is tolerably well paved, with sidewalks. Billiard-signs stare you in the face. This, I presume, may be set down as the great amusement, to which may be added the favourite monté at night. There is no lack of pulperias.

Coaches, or rather omnibusses, run several times a day to Lima. The old accounts of robberies on the road to Lima, are still fresh in the mouths of strangers. In times of revolution it was infested by robbers, but the steps taken by government have effectually put a stop to them.

The 4th of July was duly celebrated. The Falmouth, Captain M'Keever, fired a salute in honour of the day, and the Vincennes was dressed with national flags.

On the road to Lima is Bella Vista; but it is in ruins, and has been so ever since the revolution. It was generally the outpost or battle-ground of the two parties, and although the soil in the plain which borders the sea is extremely fertile, consisting of decomposed rock, containing the elements of fertility in the greatest abundance, it now appears a neglected waste. Attention to its cultivation and irrigation would make it a perfect garden. On approaching Lima, the gardens and fields are found to be cultivated and well irrigated. Fields of Indian corn are seen, some fully ripe, some half-grown, and others just shooting up,—a novel sight to us. This bears testimony not only to the fineness of the climate, but to the fertility of the soil. The gardens near the city are filled to profusion with fruits of all descriptions.

The road, on its near approach to the city, forms an avenue of about a mile in length. This, in its prosperous days, was the usual evening drive, and afforded a most agreeable one. On each side are gardens filled with orange trees, the fragrance of whose flowers, and the beauty and variety of the fruit, added to its pleasures. It is now going to decay from utter neglect. Its rows of willows, and the streams of running water on each side, though forming its great attraction, will, if suffered to remain without attention, be completely destroyed. No one seems to take interest in the public works. So marked a difference from Chili could not but be observed.

At Lima I was struck with the change that had taken place since my former visit. Every thing now betokens poverty and decay; a sad change from its former splendour and wealth. This appearance was observed not only in the city, but also among the inhabitants. Whole families have been swept off, and their former attendants, or strangers, have become the possessors of their houses and property.

The country has been a scene of commotion and revolution for the

last twenty-five years, of which Lima for a long time was the centre. The fate of Lower Peru being entirely dependent on it, and the fortress of Callao, the alternate possessors have stripped it and its inhabitants in every way in their power. It may with truth be designated a declining city.

The neglected walls and ruined tenements, the want of stir and life among the people, are sad evidences of this decay. The population is now said to be about forty-five thousand, although in former times it has been supposed to amount to as many as sixty-five or seventy thousand.

The aspect of the city, especially a bird's-eye view from the neighbouring hills, gives to the eye of the stranger the appearance of ruins. There are few buildings that have the look of durability, and no new ones have been put up for the last forty years. The plan of the city combines more advantages than any other that could have been adopted for the locality. The streets are at right angles, and all sufficiently broad. Those which run with the declivity of the ground, northwest and southeast, have water flowing through their middle. They have not, however, a very clean appearance; but this is certainly not to be imputed to the want of the facility of being made so. The uses to which these streams are put, and the numerous buzzards that frequent them, gives the stranger any other idea than that of cleanliness. The buzzards are protected by law, and may be seen fighting for their food in the gutters, regardless of passers; or sitting on the tops of the houses, thirty or forty in a row, watching for more food.

Great attention has been paid to laying out the Alameda, which is on the north side of the city. Its centre is ornamented with a number of fountains; its walks are well shaded on each side with trees; and the running water adds to its freshness: all unite to form a delightful promenade. In the cool of the evening it is much frequented, and its stone seats are occupied by numbers of citizens. This is the best place to get a view of the inhabitants; and notwithstanding their internal commotions, they appear fully to enjoy their cigarittas, which they are constantly smoking. The peculiar dress of the ladies is here seen to the best advantage, and, however fitted it may be to cover intrigue, is not, certainly, adapted to the display of beauty. A more awkward and absurd dress cannot well be conceived. It is by no means indicative of the wearer's rank, for frequently this disguise is ragged and tattered, and assumed under its most forbidding aspect to deceive, or carry on an intrigue, of which it is almost an effectual cloak.

I never could behold these dresses without considering them as an

emblem of the wretched condition of domestic society in this far-famed city.

The saya and manto were originally intended as a retiring, modest dress, to mark reserve, to insure seclusion, and to enable ladies to go abroad without an escort. The general term for the wearers is Tapada, and they were always held sacred from insult. Tapada is likewise applied to a dress which is also frequently seen, viz., a shawl worn over the head, so as to cover the nose, mouth, and forehead. None but the most intimate friend can know the wearers, who frequent the theatres in this disguise. It is to be regretted, that it is now worn for very different purposes from its original intention. Intrigues of all kinds are said to be carried on under it. It enables the wearer to mix in all societies, and to frequent any place of amusement, without being known, and, even if suspected by her husband or relatives, the law of custom would protect her from discovery. In this dress, it is said, a wife will pass her own husband when she may be walking with her lover, and the husband may make love to his wife, without being aware it is she.

The saya is a silk petticoat, with numerous small vertical plaits, containing about thirty yards of silk, and costing fifty or sixty dollars. It is drawn in close at the bottom of the dress, so that the wearer is obliged to make very short steps (ten inches). It is a little elastic, and conforms to the shape, whether natural or artificial, from the waist down. The manto is a kind of cloak, of black silk. It is fastened to the saya at the waist, and brought over the head and shoulders from behind, concealing every thing but one eye, and one hand, in which is usually seen a cross, or whose fingers are well ornamented with jewels. Before the manto is arranged, a French shawl of bright colours is thrown over the shoulders, and brought between the openings of the manto in front, hanging down nearly to the feet. The loose saya is also much worn: this is not contracted at the bottom, and in walking has a great swing from side to side.

The walk of the Lima ladies is graceful and pretty, and they usually have small feet and hands.

The houses are built of sun-burnt brick, cane, and small timber. All those of the better class have small balconies to the second story. Most of the houses are of two stories, and they generally have an archway from the street, secured by a strong portal, leading into an open court. The lower, or ground-floor, is used as storehouses, stables, &c. This peculiar manner of building is intended as a security against the effects of earthquakes. The housetops are a

depository for all kinds of rubbish, and the accumulation of dust is great. The staircase leading to the upper story is generally handsome, and decorated with fresco paintings, which are, however, far below mediocrity. This style of building is well adapted to the climate.

The Portales or Arcades is one of the most attractive places for the stranger. He is there sure at all hours to see more of life in Lima than at any other place. They are built on two sides of the Plaza. The ground-floor is occupied as shops, where all kinds of dry-goods and fancy articles are sold. Between the columns, next the Plaza, are many lace and fringe-workers, &c. &c.; and without these again are sundry cooks, fresco-sellers, &c., who are frying savoury cakes and fish for their customers, particularly in the morning and late in the evening.

The Arcades are about five hundred feet long, well paved with small stones, interlaid with the knuckle-bones of sheep, which produces a kind of mosaic pavement, and makes known the date of its being laid down as 1799. This place for hours every day is the great resort, and one has a full insight to every store, as they are all doors, and consequently quite exposed, to their remotest corner. The second story is occupied as dwellings.

The Palace of the Viceroy occupies the north side of the Plaza. The lower part of it is a row of small shops, principally tinkers and smallware-dealers. On the east side is the Archbishop's Palace and the Cathedral.

The fountain in the centre of the Plaza is a fine piece of work, and was erected, according to the inscription, in 1600, by Don Garcia Sarmiento Sotomayer, the Viceroy and Captain-General of the kingdom.

"El que bebe de la pila sequenda in Lima," is the usual saying.

"He that drinks of the fountain will not leave Lima."

The Cathedral is a remarkable building, not only from its size, but its ornaments. Most of the decorations are in bad taste, and I should imagine its former riches in the metals and precious stones have contributed chiefly to its celebrity. Certainly those ornaments which are left cannot be much admired.

Its great altar, composed of silver, might as well be of lead, or pewter, for all the show it makes. In a chapel on one side of the building, there is a collection of portraits of the Archbishops. They are good faces, well painted, and all are there but the one who at the breaking out of the revolution, proved faithful to his sovereign and the Spanish cause. They all have had the honour, except him, to be interred in niches, in the crypt, under the great altar. Many of the

coffins are open, exposing the dried-up remains of the saints, clothed in leather jackets and shoes, which the sacristan made no difficulty about disposing of for a trifle. Two skulls and a hand were obtained. There is some good carving about the choir of the Cathedral.

A hospital is attached to this church. A novel sort of hearse was seen employed here, with four drawers as temporary coffins.

HOSPITAL HEARSE.

The market of Lima is kept in an open square. It is a strange place to visit, and the scene that is witnessed there cannot fail to amuse the stranger. It is well supplied, and many purchasers frequent it. There are no stalls, and mats are used in their stead. The meat is laid on them in rows, and the vegetables heaped up in piles. Some of the piles consist of only one kind, but they are generally all mixed together. The meat, as at Callao, is cut with the grain, and into small pieces, to suit the purchasers; and poultry is cut up in a similar manner. But what will most attract a stranger's notice, are the cooking establishments. These are in great request; stews, fries, and olla podridas, are in constant preparation by some brawny dame, who deals out, with much gravity and a business-like air, the small pieces to the hungry Indians who stand by waiting for their turn. The fried dishes seemed to claim their preference, if one could judge by the number in waiting. The expertness of the woman who officiated was truly wonderful, twisting and twirling the dough in her hand, placing it upon a stick, dipping it in the hot oil, and slipping it as soon as cooked dexterously into the dish for her customers. Then again was a frier of pancakes close by, equally expert. The variety of dishes cooking was surprising, and those who fried fish exhibited undoubted proofs of their freshness, by consigning them to the pan before they ceased to live.

I was surprised at the variety of fish, meats, vegetables, and fruits; the latter particularly. These were in season, and included oranges,

cherimoyers, pomegranates, paltas, plantains, bananas, papaws, granadillas, apples, figs and ananas.

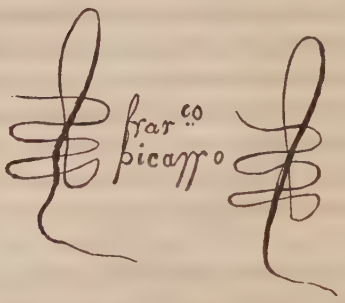
The above are the usual articles crowded into the market, but were I to stop here, one half would not be told. All sorts of goods, jewelry, cottons, woollens, laces, hardware, linen fabrics, handkerchiefs, shoes, slippers, hats, &c., are hawked about by pedlers with stentorian lungs, who, with the lottery-venders, with tickets, ink-horn, and pen, selling the tickets in the name of the Holy Virgin and all the saints, make an uproar that one can have little idea of, without mixing in or witnessing it.

The convent of San Francisco occupies six or seven acres of ground. In its days of prosperity it must have been a magnificent establishment. Its chapels are very rich in gilding, carved work, &c., and the cloisters are ornamented with beautiful fountains and flower-gardens. Part of it is now occupied by the soldiers as barracks, and their muskets are stacked on the altar of one of its chapels. It has long since been stripped of its riches and deserted, but it seems once to have possessed all that wealth, luxury, and taste could effect or suggest. The good Father Anculus, who showed the building, was shrewd and obliging. The gallery of paintings contains it is said many fine Murillos. The remains of its former splendour, even now, justifies what Father Feüillee asserted, that there was nothing of the kind to compare with it in Europe. There are but few friars here at present, but it is said to have formerly maintained five hundred, living in the greatest luxury and licentiousness. The most remarkable object in the church, was the shrine and image of a black Virgin Mary, with a white infant Saviour in her arms.

The public library is composed of rare and valuable books, both in French and Spanish, taken from the Jesuits' College and convents. They are in good order, and among them are many manuscripts which are beautifully illuminated. The librarian, a young priest, deserves our thanks for his attention and civility.

The public museum has been but lately commenced. It contains a collection of curious Peruvian antiquities, some native birds, and the portraits of all the Viceroys, from Pizarro down. At the cabildos or city hall, are to be seen some of the archives of Lima, kept until recently in good order. Many signatures of the old Viceroys and Governors are quite curious; among others, that of Pizarro is shown. As few of them could write, they adopted the *Rubrica*, made by placing the finger of the left hand and making the flourish on each side of it, the clerk filling in the name. This method has since been generally adopted among the South Americans, in signing official

documents, being considered full as binding as if the name was written.



The book in which the signatures were written, was entitled:—

LIBRO 1º DE LOS CABILDOS
DE ESTA CIUDAD DE LOS REYES,
QUE CORMIENZA,
EL ANO DE
1534.

This would make it appear that the city was founded a year before the date given in Herrera, Garcilaso, Calancha, Montalvo, and others, who dispute about the day of the month, without having regard to the year. This book bears evidence that the municipality was organized a year prior to that given by them as the year in which the city was founded. Very little doubt can exist that the city must have been founded before the municipality existed.

The theatre is a handsome building, although much out of repair. It was brilliantly lighted the night we visited it, and was crowded with numerous officers in full uniform. Among them were many Chilians of rank. The ladies in the boxes were in full costume, and made a great display of jewels. In the parterre there were many "tapadas." The horrors of the Inquisition formed a prominent part of the subject of the play. For the performance I cannot say much.

Near the Alameda, on the north side of the city, is a large oblong enclosure of nearly eight acres, with thick stone walls, and a large gateway at each end. It was intended for a naval school, and theatre to exhibit sea-fights. It contains large reservoirs, which were intended to be filled with water from the Rimac, to float a tiny fleet, some of which it is said were actually constructed. This was a favourite project with one of the last Viceroys, and a more absurd one could scarcely have been conceived. The water is now used for a much better purpose, namely, to turn the machinery of some adjacent mills.

There are three classes of inhabitants, viz.: whites, Indians, and

negroes. The union of the two first produces the cholo; of the two last, the zambo; and of the first and last, the mulatto. The Spaniards, or whites, are a tall race, particularly the females. They have brown complexions, but occasionally a brilliant colour, black hair and eyes. Some of them are extremely beautiful. The cholos are shorter, but well made, and have particularly small feet and hands. All classes of people are addicted to the smoking of cigars, even in carriages and at the dinner-table. It does not seem to be considered by any one as unpleasant, and foreigners have adopted the custom.

The cholo women partake of the dark brown skin of the Indian, have low figures, short round faces, high cheek-bones, good teeth, and small hands and feet. Their whole figure is robust.

There does not appear to exist any accurate account of the population of Peru; but it is generally believed to have decreased, particularly as regards the whites and negroes. The best information gives but little over a million inhabitants, viz.: about one hundred and twenty-five thousand whites; natives and cholos, eight hundred thousand; with ninety thousand negroes and ranchos, of whom about thirty-five thousand are slaves. This does not vary much from the number given by the geographies forty years ago. The country appears, from all accounts, not only to have decreased in population, but to have diminished in wealth and productiveness. A much less proportion of the soil is now cultivated than formerly under the "Children of the Sun."

There are half a dozen newspapers published in Lima, two of which are issued daily. They are, like the Spanish, small sheets. They have a good deal of control over public opinion. Few or no advertisements are seen in them. These are deemed unnecessary in Lima, and all the amusements, such as the theatre, cockfighting, &c., are placarded on the portals. A high price is asked for the newspapers.

On the 30th of May there was a grand procession, on the festival of Corpus Christi. It was preceded by a party of negroes, dressed in the most gaudy colours, singing, dancing, and keeping time to a native tune, somewhat like Mumbo Jumbo, to testify their joy that the blessings of Christianity had reached them. Then followed some priests, bearing lamps covered with artificial flowers, and swinging censers. Next came the shrines of the Virgin and saints, covered with tinsel and gold, mounted on large pedestals, and borne on the shoulders of men. After this came the host, and on its passing every one uncovered and kneeled down. Then came the military, who were all out, and offered us a fine opportunity of viewing the recruits, the greater proportion of whom were Indians. The government had been

ferreting out the Indians in a manner hitherto unpractised. There was much mixed blood among the Peruvian soldiers, cholos, zambos, and some few negroes, while the Chilian troops had very little. Among the Chilians, the regiment of Portales was pointed out, which had left Chili six hundred strong, and was now reduced to four hundred.

During my stay at Lima, I had the pleasure of an introduction to Mr. Mathews,* whose researches in natural history are so well known. Combined with his being a good naturalist, he has great talent as an artist. His portfolio contained many beautiful drawings of plants, flowers, and birds, from beyond the Cordilleras. He owned an estate of thirty miles square, at the foot of the eastern slope of the Cordilleras, for which I think he had paid one thousand dollars. He is married to a woman of the country, is extremely enthusiastic in his researches, and has lately recovered some of the unpublished manuscripts of Ruiz and Pavon.

There are several small manufactories of gold lace, &c., but nearly all the goods sold and consumed in the country are foreign. Lima is the great retail place. There has been lately set up a manufactory of glass, but too recently to judge of its success. The mechanical employments are numerous, but all are in a rude state. When it is considered that Lima was founded nearly a century before the settlement of our own country, it shows a marked difference in favour of the enterprise of the Anglo-Saxon race.

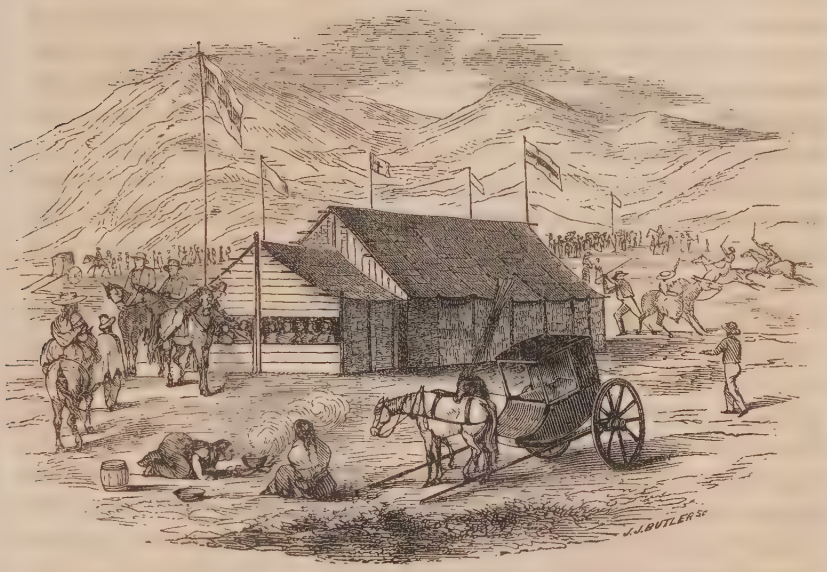
On St. John's day, (24th of June,) the patron saint of Lima, a great festival among the lower classes—the cholos, natives, zambos, and blacks—takes place. It is held in the valley of Amancaes, about three miles north of the city. Previous to the day, a number of tents and booths are erected in the valley, which is about half a mile long, and one-third of a mile wide. These are decked out with flags and banners. There are tents for refreshments, strong drinks, dancing, gambling, &c., in every direction.

On the road leading to this scene are erected shrines of the saint, where all who pass are expected to pay their contributions.

On this day, every horse and vehicle in Lima is engaged, and at exorbitant rates. The whole road leading to the valley is crowded from an early hour in the morning. The higher classes generally frequent it early and return soon, while those of the middle and lower classes continue to keep it up until a late hour. Every one is decked with the flowers of the Pancratium Amancaes, which grows in great

* In the death of this gentleman, science has lost one of her most zealous and enthusiastic labourers.

abundance in the place where the festival is held; and the decoration extends even to the horses and mules, as well as to the booths and vehicles. As the day advances, the crowd increases. No 4th of July in our own country could equal the uproarious drunkenness that ensues.



AMANCAES' FETE.

Dancing is the favourite amusement. The dance in which they most delight is a national one, called the samacueca, and no words can give an idea of its vulgarity and obscenity. I think it a happy circumstance that it is confined to this country. One Amancaes' day would upturn a whole year of morals. As intoxication ensues, it goes to extreme lengths. Italia, or rather, pisco, is pledged to every one, and many are seen with bottle and glass passing about, and pledging happiness and prosperity, in the hope of getting a small reward. The music to which they dance consists of a small guitar, accompanied with the voice, and beating of time; the time is quite monotonous, somewhat resembling the Spanish seguidilla. The crowd is great, consisting of cholos, zambos, negroes, and whites, variously dressed and jumbled together; some singing, some begging, fighting, swearing, laughing; no order, all confusion. This is the centre of the fray. On the out-

skirts are seen groups of the better classes, sitting down to their pic-nics.

The acting President and Governor of Lima, Lafuente and staff, honoured the place with their presence, to please the people. He did not, however, appear to receive any honours, nor was his arrival greeted with marks of approbation or enthusiasm. Towards evening, when the inebriated mass is returning, the great sport of the day occurs. The cholo women, who ride astride, are remarkably good horsewomen, and extremely expert in managing their horses. Their dress is peculiar: a large broad-brimmed hat, with flowing ribands of gay colours, short spencer or jacket of silk, a gaudy calico or painted muslin skirt, silk stockings, blue, pink, or white satin shoes, and over the whole is sometimes worn a white poncho. Large wooden stirrups, ornamented with silver, numerous pillions, a saddle-cloth, and richly ornamented bridle, all decked with amancaes, form the caparison of the steeds.

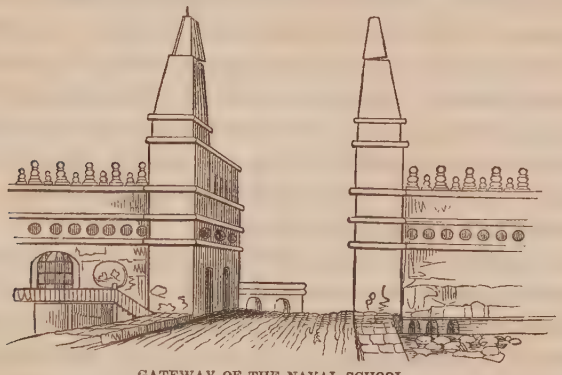
Nothing can exceed the confusion of the return of this great throng, moving over a dusty road, shouting and racing. The cholo women are always on the lead, and actively engaged in taking care of their drunken partners, who are frequently seen mounted behind them, with their faces flushed from the effects of pisco, forming an odd contrast to the beautiful yellow flowers that adorn their hats. The great feat of the women who ride single, is to unhorse their companions, which they frequently succeed in doing, to the great amusement and sport of the pedestrians, and the discomfiture of their male associates. They are seen while at full gallop to stop suddenly, whirl round two or three times, and go off again at full speed, covering themselves and the bystanders with dust. Just before reaching the city, the road is lined with vehicles, not unlike our cabs, in which are seated ladies in full costume.

The Alameda, as well as the streets leading into it, is crowded on this occasion with all the fashion of the city. Though the crowd would lead to the belief that every body was abroad, yet the doors and windows are filled with heads, more or less decorated with amancaes. This is a festival nowhere surpassed in drunkenness and uproar.

Most of the buildings in Lima have suffered more or less from earthquakes. It was the season of earthquakes during our stay, and three were felt. Some of our gentlemen complained of a sickening sensation during the first. It did not, however, do much damage. The second took place on the 5th of June, and was sensibly felt; a third was experienced on the 10th of June, with a continued shaking

of the walls and floors. The last was reported as having been more severe to the northward. At Ica, an official statement reported that about one thousand jars of pisco had been broken. They are usually set up on end in contact with each other, and contain from seven to ten gallons each. It is truly surprising how long the churches have stood, with their lofty towers. Curious effects have been produced in some places. Two conical adobe caps of the Franciscan convent have been shifted from their places; one as if by a rotary motion or force apparently in a direction from left to right; the other is turned half round, and seems ready to fall. Another instance was noted at the gateway of the naval school before spoken of. A large block has been turned one-fourth round, while those under it remain in place.

These adobe blocks have generally a large iron rod running through them. A representation of the latter is given in the annexed figure.



GATEWAY OF THE NAVAL SCHOOL.

With the name of Peru the want of moisture is generally associated. The general impression is that it never rains there. This, however, is far from being strictly true, except in certain parts of it. Were it not, however, for irrigation by the mountain streams, a great portion of Peru would certainly become nearly a desert. Indeed, the upland is so now, not yielding any herbage whatever until the pasture region of the Cordilleras is reached. We are not to imagine, however, that the atmosphere is very clear, or that sunshine always prevails. It is extremely difficult to get a clear day. Father Feüillee has put upon record, more than a century ago, that the heavens were generally obscured. I can bear testimony to the truth of this remark, for although a glimpse of the sun was usually had some time during the day, yet it was almost as difficult to get equal altitudes at Callao during our stay as it was at Terra del Fuego.

The dew (almozo) of Lima is never so great as to produce running water, yet it is more like rain than a Scotch mist.

The peculiarity of there being no rain, has been accounted for in several ways, but not to me satisfactorily. The prevailing cold and dry winds from the southward sweep over the western shores of the continent; having a great capacity for moisture, they absorb it as they advance to the northward, from every thing. On reaching the latitude of 12° S., they cease, and having become saturated, now rise to a sufficient height, where they are condensed by the cold strata, and again deposited on the mountains in almost constant rains. This will account for the aridity in the high Cordilleras of Chili, as well as for the existence of the Desert of Atacama, the want of rain on the coast of Upper Peru; and at the same time, for the moisture of the high Cordilleras of Peru, which will be shortly spoken of. It will be remembered that our parties on the Cordilleras of Chili found the aridity to increase on ascending, to the very edge of the perpetual snow, and all the plants were of a thorny character.

The records of Lima mention the falling of rain only four times in the eighteenth century, and the occurrence of thunder and lightning an equal number of times. But this applies to a small part of Peru only, namely, the country bordering the coast, some fifty or sixty miles in width, around Lima. It will be seen that our party who visited the interior, when at the height of ten thousand feet, entered a region subject to rain, and on the crest of the mountains the soil was kept perfectly moist by the frequent snows and rain.

Mr. Bartlett, our Charge d'Affaires, gave me the range of the thermometer at Lima throughout the year, as being from 60° to 85°; during our stay, which was in their winter months of May and June, the range was from 65° to 69°.

Fire is not used often, but from the continual dampness there is a cold and clammy feeling, that is exceedingly uncomfortable and prejudicial to health. Lima has certainly the reputation of being a healthy place—how obtained I know not—but it certainly does not deserve it. The interments have annually averaged over three thousand five hundred, in a population amounting by the best accounts to no more than forty-five thousand. Many of these deaths are those of strangers, and the climate has always been fatal to the Indians.

During our stay at Callao, the temperature of the air varied from 57° to 63°. On July 4th, it stood at the same point in both places. The temperature of the Rimac on the 11th of June, was 69° to 71°, on the 4th July, 64°.

The Rimac derives its waters exclusively from the snows of the

Cordilleras. It is a mountain torrent throughout its whole course. The quantity of water in it is small. The width at its mouth is about thirty feet, and one foot deep. It has not sufficient force to break a passage through the beach to the sea, and the water filters through the pebbly soil.

In Peru, when the land is irrigated, it is one continued vegetation throughout the year. Harvests are gathered in every season, and flowers and fruit may be seen at the same time. On the east side of the Cordilleras the harvest takes place about the middle of June. Tarma and Jauja are the first cultivated districts. The "montanas," as they call the forests, are situated at the eastern base of the Andes. Their crest is estimated to be thirty or forty leagues from the coast, and it is about fifteen leagues farther to the montanas. The thermometer during the jaunt to the Cordilleras ranged from 50° to the freezing point of Fahrenheit.

During our visit, the Chilian troops were in possession of the country, and Lima was garrisoned by them. They were a sickly and worn-out body of men, the tertiana prevailing to a great extent among them. They were apparently well clad, new clothing having been issued to them at the expense of the Peruvian treasury. They were all, I was told, extremely anxious to return to Chili. Although the nominal power was in the President, Gamarra, or the acting Governor, Lafuente, until his arrival, yet Bulnes commanded and watched over their proceedings. The Peruvians are to all intents and purposes a conquered people, although they profess to think the Chilians their friends, and say that the war was only against Santa Cruz and his policy. No favourable accounts can now be given of the state of Peru. A want of confidence exists every where. The government is bankrupt in principle and funds. The tenure of property is uncertain, and oppression, extortion, and want of principle have brought the country to the verge of ruin. The people are harassed by the frequent changes; and the government, a military, and constantly changing one, gives rise to all kinds of disorder. This is to be imputed to the ambition of the various rulers or generals, who endeavour to keep old and little understood controversies in continual agitation, for their own benefit. Revolution is the order of the day. One broke out again in Payta a few days before we sailed, and Peru was raising troops to attack Bolivia.

The manner of recruiting the army is not unlike the employment of press-gangs in England. They scour the country far and near for recruits, and if not obtained, compel every poor Indian met with, to serve against his will. Agriculture, and every other kind of honest industry, has fallen into disrepute, if not into entire neglect, and the whole country is left in a continued state of anarchy and confusion.

Yet, extraordinary as it may seem, one would never suspect, from the outward appearance of its inhabitants, that the country could be in such a state. All their pastimes go on as usual. Among these, the festivals of the church are most conspicuous; for they yet claim the outward respect of all, both high and low, and constitute the only bond that holds society together. All are subservient to the rites of the church. Even the Chilian general officers dismount and kneel when the procession passes; and all the different guards, with their officers, not only give the military salute, but also drop on their knees.

I was much struck with the sight of a mistress and her slave, who had followed her to the cathedral, kneeling on the same piece of cloth, telling their beads, and saying their prayers together. This I was told was quite common. It seemed a tacit acknowledgment that religion reduced all to the same level. From what I could learn, the slaves are treated with great kindness.

During our stay here, we had the misfortune to lose one of the marines, Benjamin Holden, who had been transferred but a few days from the Relief to the Peacock. He was interred at San Lorenzo. One of the servants on board the Peacock, a boy, was discovered to have the small-pox. He was immediately removed to a tent at San Lorenzo, and every thing provided for him, until he could be sent to Lima, Mr. Bartlett, our consul, having procured permission for his removal there.

Every precaution against this disease had been taken, by vaccinating the crews after leaving the United States.

I felt great uneasiness, lest we might carry it with us to the Islands, where it might spread among the natives, and render our visit ever memorable by the introduction of that dreadful scourge. All the clothing, and every thing that had been in any way connected with the sick boy or his nurses, was destroyed, in the hopes of rendering us exempt from the contagion.

LIMA HOUSE.

CHAPTER XIII.

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CHAPTER XIII.

PERU—CONTINUED.

1839.

On the arrival of the Relief at Callao, Messrs. Pickering, Rich, Agate, and Brackenridge, requested permission to make a jaunt to the Cordilleras of Peru, for the purpose of making botanical collections. I felt much gratified that this object had been effected, although I could not but regret that they were suffered to depart without the necessary instruments for obtaining the altitudes, which had been put on board the Relief at Orange Harbour, for that very purpose.

Mr. Rich spoke the Spanish language well, which afforded the party many facilities for overcoming the difficulties that were thrown in their way.

In Lima the journey was considered as a very serious undertaking, and likely to be attended with much danger, from the banditti who frequent the route they intended to pass over,—that to the mines of Pasco. Through the friendly assistance of Mr. Biggs, of the house of Messrs. Bartlett & Co., every thing was made easy. By his advice, they supplied themselves, not only with blankets and horse-furniture, but with all sorts of provisions, and particularly with bread, of which they took as much as they could carry, notwithstanding the country was described as well inhabited. As a preliminary step, it was necessary to provide themselves with passports, for which they lost no time in applying. After the delay of a day, the passports came in the form of a letter of protection and recommendation from Lafuente himself, to the local authorities throughout all Peru, couched in the most liberal terms, and treating the affair with as much importance as if it were a national one. It is a regulation that the names of all who receive passports, shall be published in the official gazette; their intention, therefore, became known to all Lima. From the few who

are gazetted, it would appear that but a small number travel into the interior, or else that the regulation is not very strictly complied with.

The injunction to render the party assistance in case of need was very strong, and among other things specified to be furnished, was *clothing*, which was thought to look somewhat ominous in this country of banditti. In spite of the positive terms in which the passport was expressed, it was found of little effect in procuring them mules or horses; and it was not till after much trouble and disappointment on many sides, that horses were at last obtained from the post establishment.

On the 16th May they were ready to set out, and were accompanied for some miles by Mr. Biggs, whose friendly advice and assistance they had often, during the jaunt, reason to be thankful for. It saved them much inconvenience, and was the cause of their being provided with many little comforts, without which they would have suffered privation.

Their proposed route was up the valley of the Rio de Caxavillo, the river next to the northward of the Rimac. Leaving Lima, they passed through the suburbs of San Lazaro, at the gate of which, and for the only time during the journey, they were desired to show their passports. Some little difficulty arose, and an intention was expressed to unload the baggage-mule for examination. This, however, was soon removed by the reading of the passport, and the examination ended in many bows, and the repeated exclamation, "Go on, go on! God speed you!" Such was the talismanic effect of an official document, at the period of our visit.

After leaving the city, their route lay along the margin of the extensive plain that borders on the sea, at the foot and over the low hills which skirt it. Many columns of dust and loose particles of sand were seen rising from the heated plain, stirred by the action of the wind, forming vortices of considerable diameter and elevation. Clouds of smoke, too, were visible in the distance, proceeding, according to the information of their guides, from the burning of the cane-brakes. The Peruvian willow, so much resembling the Lombardy poplar in its form, was much admired, and the contrast in the landscape between the barren clay-coloured hills, and the bright green of the irrigated fields, was quite remarkable.

At the distance of three leagues from Lima, they passed through the ruins of an Inca town, situated (as they uniformly found them afterwards) just on the border of the irrigated valley. The walls of the town were very thick, built of mud and unburnt brick, at right angles, very much after the modern manner; the hills, also, were seen

covered with the ruins of Indian buildings, some of them resembling fortifications.

They now turned up a beautiful valley, on the irrigated fields of which were seen herds of horned cattle, horses, and goats,—a proof that the irrigated land is not exclusively used for tillage.

At six leagues from Lima they reached Ponchorua, the first stopping-place; but the party concluded to go a league beyond it to Caballeros, where they passed the night. They arrived there in sufficient time to make a short excursion to the banks of the Rio de Caxavillo, which appeared a larger stream than the Rimac.

Around Caballeros are very extensive meadows and fields of clover. The posada was found occupied by the guard and muleteers who acted as a convoy of silver from Pasco. They gave up the only room in the house for our gentlemen, into which they were shown, and where a good supper was provided for them, while the guard took up their quarters in the yard. The metal, it was observed, was in large masses of piña, some of them heavy enough to be a load for a mule, and an inconvenient burden to run away with.

They passed the night on the tables and rude seats, under cover,—a luxury they had not yet learned to appreciate.

At midnight they felt the shock of an earthquake. A distant hollow sound was at first heard, which seemed to approach, increasing rapidly, and before they could spring to their feet, the house was rolled and shaken as if it had been on an agitated sea. Mr. Rich says that it was with difficulty he could hold himself on the table where he had been lying. The natives of the adjoining huts ran out into the road, uttering horrible shrieks, striking their breasts, and offering up prayers to the Holy Virgin to protect them. The shock continued severe for forty seconds, but lasted altogether about two minutes; it produced a slight nausea, like sea-sickness, which continued for some time afterwards, and a bewildering sensation, that rendered it difficult to collect their ideas to speak. The sound resembled that produced by throwing stones over precipices, so as to roll on hollow ground beneath. This earthquake was the most violent that had been experienced for some time, and was felt sensibly at Lima and through all Lower Peru. No material damage was done,—in consequence, according to the people of the country, of its *not getting to the surface.*

Early on the 17th the party set out up the dry mountain valley, the soil of which is composed of stones and loose powdery earth. This kind of ground continued for five leagues, with not a drop of water, nor was a plant or bird collected; nothing was seen growing but a few Tillandsias. On this route they passed many crosses, mark-

ing the spots where there had been loss of life: a sight that was not calculated to excite pleasing thoughts, and bringing to mind not only the great number of murders that had taken place, but the daily occurrence of attacks upon small parties of travellers by the desperadoes of Peru.

Immediately on the confines of this dreary waste is Yanga, a deserted-looking place, but having some good gardens and orchards. At noon they reached Santa Rosa de Quivi, a small place, where they procured some good fruit. After travelling two leagues, they at dark reached Yaso, and stopped at the postmaster's house; he was not at home, but they were permitted to sleep in the porch or veranda. Nothing edible was to be found in the village, except a few potatoes, after supping on which they disposed themselves on the clay and stones, with their arms ready for service,—a precaution necessary at times, even in the most frequented places, in Peru.

During the day, they had been much annoyed by sand-flies, and fleas were as usual in myriads at night; besides these, they had a few musquitoes, but the latter are seldom felt in Peru.

The screaming of parrots during the night had announced that some change had taken place in the vegetation. In the morning they found this to be the case. The land in the vicinity of the town was cultivated, and some good orchards and fields of clover were seen; the mountains, which had hitherto been gray with Tillandsias, had now assumed a greenish tinge. Agaves made their appearance here, and a few miles beyond, the hills became entirely green: all showed that a different region had been entered. The inclined roofs of the huts proved that rains were experienced, and that it was found necessary by the inhabitants to protect themselves from them.

The valley had now become more contracted, and level ground was seldom seen; the mountains increased in elevation, the roads and scenery partaking of the character of Madeira. Cascades were seen springing from almost the very summits of the high peaks; cattle were grazing, and occasional cultivated patches were mingled with the pasture-grounds; the aid of irrigation was no longer necessary; and the Cordillera plants of the Flora Peruviana, with the vegetation made known by Humboldt and Bonpland, were recognised. At noon, after travelling six leagues, they reached Obrajillo, the rendezvous of the two celebrated Spanish botanists, Ruiz and Pavon, authors of the Flora Peruviana.

There are three towns, Obrajillo, Canta, and San Miguel, about a mile distant from each other, said to contain three or four thousand inhabitants. At Obrajillo, the general to whom they had letters of

introduction, was not at home; some difficulty in getting mules occurred in consequence, and it was not until much time and patience had been exhausted, that our gentlemen understood the real difficulty, which was, that the horses they had brought from the low country were not considered capable of standing the cold and fatigue of the mountains, the owners at Lima having refused to allow their mules to cross the mountains. They were assisted in procuring mules and guides by the general's son.

Obrajillo, the largest of the three towns, contains about one hundred cottages. It has a stone church, with two towers, apparently of some age, which fronts on the open square. The dwellings are of one story, without floors, and almost without furniture; yet it is said to be the residence of many wealthy people. How true this may be, it was impossible from appearances to determine, for the high and low, the rich and the poor, all seem to live in the same style.

The difficulties that occurred in procuring mules for their journey, had delayed them so long as to place it out of their power to proceed before the next day. The opportunity of visiting the environs was taken, and a large collection of plants was obtained, the annuals being found in the right season for making collections. The cascade which was seen as they approached, was visited, and exhibited a picturesque and beautiful appearance, even when it was four miles distant.

At Obrajillo there are many pretty gardens and fields, under a good state of cultivation. The roadside itself looked like a flower-garden, and flowers of almost every hue were seen on either side, Calceolarias, Lobelias, &c.

Here was the first point where they had met the llama used as a beast of burden; the load which they carry is from seventy to ninety pounds.

On the 19th, at an early hour, some vagabonds, assuming the name of Chilians, went the rounds of the village, helping themselves to every thing they desired, to the utter dismay of the inhabitants, who made no resistance. The consequence was, that having neglected to supply themselves with bread the evening before, they lost the opportunity of doing it. This was a serious inconvenience, for Obrajillo supplies the upper country with bread, as Lima does the lower, and it is procured with difficulty, except at these two places. Potatoes were therefore taken as a substitute, though a very inconvenient one, from their great weight and bulk.

They were on the route by six o'clock, and an hour's ride brought them to a spot where the river formed a very picturesque rapid, soon

after which they entered into a wild and romantic pass, between steep acclivities and precipices of immense height.

At ten o'clock they reached Culnai, a distance of five leagues; it contains about thirty cottages; its height is believed to be ten thousand feet above the sea, and here cultivation ceases, ending with the potato, Tropæolum, Oxalis, and Basella. The second region of plants also terminates here, and now ensued the "Paramera," or pasture region of the Andes, avoided by the inhabitants of the lower districts on account of the cold. This third region gives growth to a set of plants which make a gradual transition from those of the second region to low alpine scraggy bushes, none of which exceed two feet in height. The Paramera is remarkable for a dense sward of coarse grass, and low herbaceous plants, principally of the order Compositæ. The flowers of the latter, it was remarked, were particularly large in proportion to the plant. These form a rich pasturage for the flocks and herds, which are seen feeding in the valleys and along the sides of the hills.

No cultivation is attempted beyond Culnai, and but two species of Cacti were met with above this point.

They had hitherto for the most part followed a northerly direction, but now they diverged more to the northeast. The temperature was falling as they ascended, the air was clear and bracing, and the scenery as they advanced become more interesting, and even sublime. To its wild and precipitous features was now added the high snowy peak of La Vinda in the distance, and some few spots of snow were occasionally seen in places sheltered from the sun's rays. The mule-paths had become narrow, and when they met with mules, which was often the case, it became necessary to turn under the rocks, until the path was clear. On one occasion, one of the party allowed his mule to take the outside; the consequence was that a muleteer shoved mule and rider several feet over the bank. No injury was received, and the dilemma passed off with a good laugh at the fright.

The sagacity of the mules on these occasions is remarkable. They endeavour always to cling to the wall side, and will succeed in doing it, if not prevented by the rider. Their caution is great when they apprehend danger in passing over steep places; the instant danger was anticipated, the nose and fore feet were used to ascertain its extent, which done, the animals cautiously proceeded, and reached the bottom with great care and ease both to the rider and themselves.

About three o'clock they had gained the fourth or alpine region, where they were met with sharp and cutting winds, accompanied with

hail and snow, that proved very uncomfortable to their sunburnt faces: this was supposed to be at an elevation of about fifteen thousand feet. Our gentlemen now felt the effects of the elevation in headache, difficulty of breathing, and excessive lassitude. The crest of the Cordilleras is at this place a league in width, the surface very uneven, containing small lakes without outlets sunk in deep hollows; beyond this, the streams which form the extreme sources of the Amazon were running to the eastward. After travelling two leagues on a gentle descent, they arrived at Casa Cancha about dusk.

Those of the party who first arrived witnessed a fracas with the cuchillo, so often appealed to here when a misunderstanding occurs; no injury, however, resulted from it.

Casa Cancha consists of three huts, and is nothing more than a muleteers' rendezvous; the place was in charge of two women, who in expression, if not in form, might have been taken for witches. The accommodations, if they may be so called, were an apartment common to all the inmates, with no fastening to the door or windows, without a fire, and nothing but the hard ground to lie upon.

COOKING AT CASA CANCHA, PERU.

At night, the thermometer frequently falls to the freezing-point, and the climate is like that of winter; there is not, however, a stick of wood nor any resinous Umbelliferæ, as on the Chilian Andes, to be had, and

the cooking is done with turf, when it can be obtained, but dry cow-dung is most commonly used for this purpose. This is the only and the best establishment the place affords; even the first females in the country can procure no better accommodations, and will bear it for the night with contentment.

As a special mark of distinction, a smaller apartment was assigned to our gentlemen, in a hut adjoining that in which their supper was cooked, of which they witnessed the preparation. The cooking range was of peculiar construction, and might serve as a pattern for a modern *cuisine*. It occupied one corner of the apartment, and appeared to be convenient and well adapted to the wants of the inmates. The vignette on the preceding page is a representation of it and the occupant.

After a time the fore-quarter of mutton made its appearance, in the hands of their landlady, scorched to a cinder. Being unprovided with a knife, she began to tear it into small pieces with her fingers. Our gentlemen remonstrated, but nothing would stop her until nearly every morsel of it had passed through her dirty hands. This, added to her state of intoxication, caused some of them to lose their supper from sheer disgust, though all agreed that she carved or tore it into pieces in a most dexterous manner.

After supper they were informed by their guides, in much consternation, that a band of Chilian marauders were approaching; the whole establishment was in great uproar. The party, however, proved to be a convoy. The officer in charge was civil, and engaged freely in conversation on the pending contest between Chili and Peru.

During the night the party were very much troubled with headache and difficulty in breathing; they passed an uncomfortable night on the clay floor. The thermometer in the doorway stood in the morning at 33°.

Casa Cancha is in a valley surrounded by lofty mountains. Its height, upon the authority of a gentleman at Lima, is fourteen thousand five hundred feet above the level of the sea. Pasturage in its vicinity is good; sheep and cattle are abundant: bread and potatoes are brought over the mountains from Obrajillo; of these they have oftentimes but a scanty supply, which was the case at this period. The evening previous to their arrival a theft had taken place there,—a gentleman had had his fire-arms stolen; a great loss when one takes into consideration the nature of the country, and the dangers to be encountered in travelling.

On the morning of the 20th, with one exception, they were all affected with vomiting, headache, and fever, and still suffering much from difficulty in breathing; this is usually felt on first visiting these elevated regions, and is said to be particularly so at night.

The morning proved so boisterous, with frequent hail-showers, that they determined to remain the day, to rest their mules and recruit themselves. Their breakfast was more acceptable than the last night's supper; it consisted of olla-podrida and milk.

As the weather allowed them to botanize, they set out in two parties, but had not been occupied over two hours, before they were overtaken by a severe snow-storm, which entirely covered up all small plants, and made it difficult for them to scale the rocks.

On the 21st, they had determined to proceed to Baños, which, from the description of their guides, who were ignorant, however, of the route beyond Casa Cancha, they had been led to believe was on the eastern slope of the mountain.

They started at an early hour, with the wild geese flying and feeding around them, determining to visit Alpamarca, which is distant from Casa Cancha about two leagues; but owing to their guides being unacquainted with the paths, they were led about among the mountains, and over extensive plains, covered with coarse herbage. A variety of beautiful flowers were found, and many domesticated llamas were seen feeding. At eleven o'clock they stumbled, as if by accident, on the place, consisting of a number of huts; one of these showed the welcome sign of bread for sale, viz., a basket stuck upon a long pole; and they were fortunate in procuring some small rolls.

Alpamarca proved to be in the vicinity of a silver mine, and here they found a goodly company of Peruvian gentlemen, collected from various quarters, and among them the general to whom they had brought letters to Obrajillo. They were received with great kindness and attention; the company insisted upon their dismounting, and gave them the cheer they had prepared for themselves, which was readily partaken of. It was served in a large gourd-shell, and consisted of a Spanish hotch-potch, or olla, with carrots, pot-garlic, pepper, and small bits of mutton. It was observed, as the eatables were disappearing, that the Spanish Dons now and then would partake of the tidbits by reaching over their shoulders from behind. This repast was well timed, for our party had been fasting sufficiently long to enable them to do ample justice to it.

On further examination, the hut proved to be provided with some few of the necessaries of life, although the supply was not large.

The Peruvians sent for the superintendent of the mine, and in the mean time showed the process of extracting the silver, which was as follows: the ore is broken up until it resembles earth; it is then thrown into a large round vat and mixed with mercury and water; six or eight mules are then turned in and driven round and round, until the

amalgam is formed; it is then put into a vessel, and stirred with water until the earth mixes with it, and the water being poured off, leaves the amalgam, whence the mercury is finally evaporated.

The ore appears to be taken almost entirely from the surface. It is poor, and the mines do not yield much profit. There are many old veins that have been extensively worked, but owing to their depth have been abandoned.

The superintendent arrived after a while; he proved to be an English miner (Mr. R. Bevan), who had been twenty years in the country. He was delighted to see our party, saying that an American and Englishman were all the same in Peru, and that he had not heard his own language spoken for two years. He informed them that the old Spaniards had worked the mines cheaper than any one has been able to do since. They were large landholders, and contrived to keep themselves in debt to their tenants; this they always paid in manufactured goods, very much in demand with the Indians who worked the mines, thus making a double profit on the wages. At the present time the mines are worked by Indians of a mixed blood, who have a language of their own. They are much addicted to the use of coca (the leaf of the Erythroxylon coco, which is mixed and masticated with "*Quinoa*,") and without a supply of this leaf they will not work.

Mr. Bevan took the party to the mine, which is some distance up the mountain. Much difficulty was experienced in breathing the rarefied atmosphere, and great fatigue in walking, so much so, that it was necessary to stop every few steps to rest; and what was surprising, Mr. Bevan and the Indians who accompanied them, appeared to be more affected than any of the party. He assured them it was the same, even with the Indians born on the spot, showing that neither time nor other circumstances can acclimatize a constitution to this elevated region. On reaching the mouth of the mine, they saw several emaciated and ghastly-looking Indians seated near the entrance; they descended a few yards into it, but found that time would not admit of the delay necessary to pass down to the places where they were at work; and wishing to devote their attention to the interesting region of botany in which they then were, they gave up their purpose of descending.

On no part of their journey did they find so many remarkable plants as on this mountain; for information respecting these, the reader is referred to the Botanical Report.

Towards the middle of the afternoon they returned to the hut, when they determined to proceed to Baños. Previous to leaving Alpamarca, they had some difficulty with the guides, who were dissatisfied with their bargain; it therefore required some management to prevent them

from deserting altogether, and caused our gentlemen some fear lest they might be compelled to return; but after much dispute, the guides consented to proceed, although it must be allowed that the bargain was far from being advantageous to them.

Along the road to Baños they passed some high ridges, with snow and ice coming at times down to the path; also lakes in deep ravines, somewhat resembling small craters, which, like all the rest they had seen, were tenanted by numerous water-fowl.

The crest of the Andes did not appear here quite so broad as it had been found to be four leagues to the southward, but its elevation was thought to be greater. The contiguous ranges of snowy peaks, in the direction of Pasco, were very striking. The Indians have names for all the most remarkable ones, but the Spaniards embrace the whole, together with the principal one, under the name of La Vinda.

From the direction of the descent to the northward and westward, they began to suspect they were descending upon the western slope of the Cordilleras instead of the eastern; this proved to be the case, which was no small disappointment, as it was their original intention to reach the wooded district on the eastern slope, termed "montanas." In this they were therefore disappointed. As they proceeded, the country improved, the climate became milder, and the soil richer; on their way they crossed a small stream, which was said to be the source of the river Chancai.

At dark they reached Baños, which is computed to be upwards of five leagues from Casa Cancha. Baños is considered to be at about the same elevation as Culnai, but the descent is more rapid to the former. According to the custom of the country, they applied to the alcalde for accommodations, who is obliged, according to law, to furnish travellers with a house, if the town should possess none for the use of strangers, free of expense, and to provide them with a cook; the travellers buy their own provisions, and pay for the cooking, one real for each dish.

Baños is celebrated for its mineral hot springs, from which it derives its name; they flow from the base of a high mountain.

The town consists of about thirty houses, and a church, of which the inhabitants are very proud. It is a neat village, situated in a deep ravine, by the side of a tumbling stream, bounded on both sides by mountains three thousand feet high. The mountain sides appear so precipitous, that the remark was made by one of the party, "that he could not conceive why the cattle that were feeding on their sides did not fall off."

Along the margin of the stream, carnations, pinks, stock gilly-

flowers, and French marigolds are naturalized; the pinks grow in immense numbers in every crack and crevice.

The cabbages here are woody and arborescent, like the cow or tree-cabbage, the trunk and branches being quite hard and covered with bark; they have at a distance some resemblance to the Brugmansia suaveolens.

The thermometer stood at 50°, and the weather, in comparison with the day before, was quite mild.

The hot spring is close to the village; owing to their thermometer being for low temperatures, not graduated above 140°, they did not get its exact temperature; but eggs put in were cooked in about three minutes, and their tea was prepared by a vessel being placed in it, so that it could not be far from the boiling point, at ten thousand feet elevation. No steam was seen to issue from the orifice, but vapour rises afterwards to mark the spot; there is also a strong smell of sulphur, and at night a thick cloud hangs over the spring. The water was tasteless, and there was a coating of the red oxide of iron on the substances over which the water had passed; and in some places a white powder was observable. A few yards distant from the hot spring was a cold one, which, mingled with the hot, is found to have a very agreeable temperature for a bath, in which the people bathe and women wash clothes; the hot spring was estimated to discharge several gallons in a second.

The soil in this valley is good, and cultivated in some places with care: no fruit was observed. The largest trees were a species of Elder, and a Buddlea; Calceolaria, Salvia, and Heliotropium, abounded.

On the 22d they determined to remain at Baños. At an early hour in the morning they found the village deserted, and it appeared on inquiry that all the inhabitants had gone abroad to tend their herds. For the purpose of taking as wide a range as possible in search of plants, our gentlemen separated, some going up while others descended: they all met with great success in their botanical researches. Dr. Pickering attempted the ascent of one of the summits; by noon he had reached a high elevation, and looking up, he espied a huge condor soaring down the valley. He stopped to observe the majestic bird, as it sailed slowly along. To his surprise, it took a turn around him, then a second and a third, the last time drawing so near that he began to apprehend it meditated an attack. He describes himself as being in the worst possible condition for a fight, his strength being exhausted by climbing, and his right hand having been lamed for some days from a hurt. The nature of the ground, too, was any thing but favourable for defence; but there was nothing left but to prepare for a

fight, and with this intent he took a seat and drew his knife. At the instant, as if intimidated by the sight of the weapon, the bird whirled off in a different direction. Dr. Pickering confessed, however humiliating the acknowledgment, that he was at the time very well satisfied with the condor's determination to let him alone.

Condors are numerous here, and many stories are related of their attacks upon animals; but this was a more decided manifestation of a disposition to assail the human race than any we heard of.

Dr. Pickering was enabled to reach the ridge that bounded the valley, but there were many higher beyond. The view thence was magnificent, overlooking to the west eight distinct ridges between him and the sea, which was scarcely defined enough to be made out with any certainty. He descended by the same route again to the village. The alcalde discovering that one of the party (Mr. Agate) was an artist, became extremely anxious that he should make a sketch of his father-in-law, an old revolutionary soldier, who resided there. As the son-in-law had been so attentive, and offered them so many civilities, among others the loan of a silver dish, spoon, and fork, he could do no less than gratify these wishes. For this purpose the old man dressed himself in his uniform. The task of sitting was almost too much for him, and he was nearly overcome with the excitement and exertion. The old man was greatly delighted with the picture, as were all those about him, except the son-in-law, who expressed great dissatisfaction that it should be without legs,—it being only a half-length,—and offered a large price to have them put on; but time did not admit of it. The sketch was given to him, which has placed it out of my power to present it to the eye of the reader in a wood-cut.

Mr. Agate's first effort was deemed so successful that his reputation was at once established at Baños, and shortly afterwards he was called upon by the sacristan to engage him to paint the four Evangelists for the church. Price was no object, provided he could do it, and they would besides consider it as a great favour.

Some of the bystanders proposed to have the constable painted, and pointed to a strapping big negro.

The houses literally contained no furniture, and the silver lent to our party was believed to constitute the only valuables in the place. The only articles besides that were seen, were some roughly-made wooden spoons, earthen dishes, and water-jugs, a few boards made into a rough table, with a stool or two, and a bedstead made of canes and plastered with clay. In no part of the United States, whether in the cabins of the Far West, or in the poorest suburbs of our eastern cities, are persons to be seen living in such a miserable manner. The country-

people of Peru, notwithstanding they are surrounded with every thing to make them comfortable, want the knowledge and industry to use the advantages nature has given them.

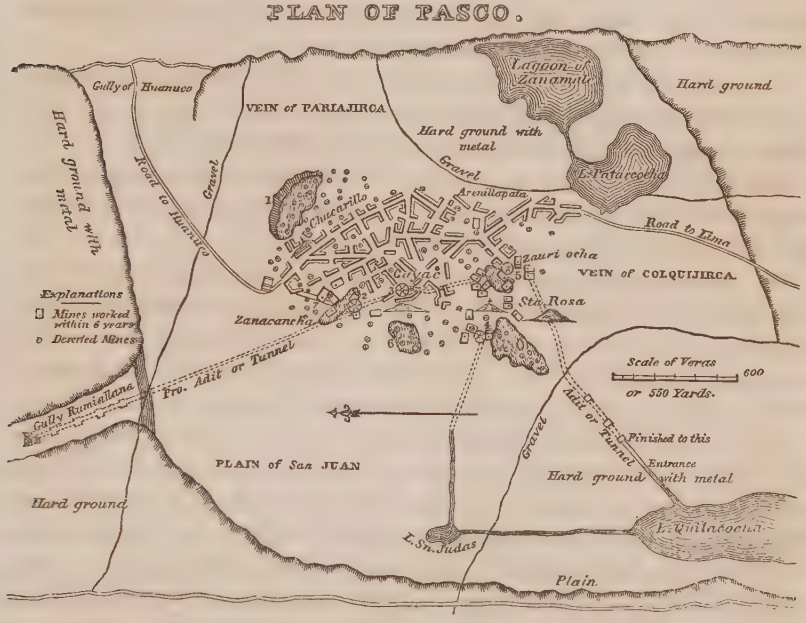
On the 23d they left Baños on their return. Notwithstanding their horses had had some rest, their backs were in a shocking state, but the sores did not seem to be regarded much by the guides, who applied soap to them; they scolded and blamed the English saddles, which they called "Gallapagos turtles."

The party had determined to make another visit to Alpamarca, but the guides would not listen to it, giving as a reason that they should have their horses stolen if they went. While this discussion was going on, they met a person who informed them that the only persons now there were Indians. As their only inducement to return was the agreeable company they had left, they acceded to their guides' views, and taking another direction, arrived at Casa Cancha in the afternoon. At night some Chilian cavalry arrived,which caused great alarm among the occupants of the huts and the guides, for fear of losing their horses, a disaster which they said often occurred when such visiters came. The commander proved to be a gentlemanly person, and rendered our party much assistance. This party had left Pasco, the chief mining place of Lower Peru, in the morning, and represented it as a place of considerable trade, containing many foreign residents, including English, American, French, and German. He stated that the *Quichua* language was spoken there, and that the Spanish was not commonly understood.

The town of Pasco is at an elevation of thirteen thousand feet, and situated in the plain of San Juan, at the head of two ravines or gullies, one called Rumiallana, leading to the northward, and the other Huanuco, to the eastward, where the two great veins of Colquijirca and Pariajirca unite. These are supposed to extend some seventy miles in length, and the town of Pasco is situated at their junction, a plot of which, taken from the survey of Mr. Trevithick, is given on the next page. The part of the ground that has been broken up, and in which ores have been found, is about half a mile in length in a north and south direction, and about one-fourth of a mile east and west. Within the whole of this extent, ores have been mined of greater or less value, and the mines formerly worked and now deserted are said to amount to upwards of a thousand: some of these are represented on the plan by round marks.

The town of Pasco is surrounded on three sides—northeast and south by hills of blue limestone; on the west the hills are of sandstone. and on the southwest of a blue slate. Through the latter rock the adit which comes up from the lake of Quilacocha has been driven, until it reached the metalliferous ground in the district of Santa Rosa. All

the ores of the Cerro are ferruginous, and the silver nearest to the surface is contained in an ochreous iron-stone. In particular spots the silver is found mixed with lead and copper, and at variable depths in different localities the ores rest on a bed of solid iron pyrites, which in some mines yield silver and in others not.



Although there appeared to be two veins, crossing each other at right angles, yet strictly speaking there is but one, the great vein of Colquijirca. This vein comes in from the hill of Uliachim, on the south of the town, and runs through the whole metalliferous ground to the edge of the plain of San Juan on the north.

On the course of this lode, generally speaking, the richest ores are met with. On each side of the vein an extensive deposit of ore is generally found, with little regard to the ordinary regularity of metalliferous formation.

The plain of San Juan is divided into many mining districts, to which names are given to distinguish them more readily. The southernmost of these is called Zauricocha, and contains several mines, from which great wealth has been produced since the revolution. This is the region from which all the richest ores have been produced, and it has been always looked upon as the most important district in the Cerro. It is believed that farther south, between this point and the hill of Uliachim, some good ores exist; but no attempt has yet been made to mine there.

In the district of Santa Rosa, lying west of Zauricocha, the greatest quantity of ore has been raised: it has been worked down to the level of the adit; and in several mines, where good ore has been discovered, they have descended to a lower level, drainage having been effected by hand-pumping.

On the east of the Zauricocha is the district called Arenillapata, in which few mines are now worked; the ore which is produced, although abundant in particular spots, is not rich.

Immediately within the town there are some few mines that are good, but there has never been any extensive work carried on. It is believed that profitable ore yet remains to be discovered.

Cayac, another district lying north of Zauricocha, is worked to some profit; the upper adit from the northwest reaches it, and several mines in it have been yielding good returns.

To the north of Cayac are the Chucarillo and Zauracancha districts, the working of the mines in which had been impeded by water accumulated since the breaking out of the revolutionary war. The upper adit, leading from the gully of Rumiallana, is carried above them, and they consequently derive no benefit from it.

To the north of these last two districts lies the plain of San Juan; there are a few small veins running through some parts of it, but no important discovery has yet been made, although many mines have been opened and carried down to depths of from one hundred and twenty to one hundred and fifty feet. The lower adit, from the gully of Rumiallana, is to run through it, and may open to the proprietors some discoveries to recompense them for their labour.

The whole number of mines considered rich in the different districts, may be enumerated as follows:

In Zauricocha	12 to 14.
Santa Rosa	20 to 25.
Cayac	10 to 12.
Chucarillo	5 to 6.
Zauracancha	10 to 12.

Each of these mines comprises a space of one hundred and eighty feet long by ninety feet wide.

The silver ores are estimated by a measure called a box of ore, which contains twenty-five mule-loads of ten arrobas or twenty-five pounds each. Each box varies in value from six Spanish marks to three thousand; the former being the lowest which, under the most favourable circumstances, will pay the cost of working. The poorest is of course the most abundant.

The miner who can raise ores in considerable quantities, which will give ten to twelve marcs per box, does well.

The produce of the mines since the close of the revolutionary war has amounted to the following, viz.:

			MARCS.	OZ.
In 1825,	228 bars, . .	weighing	56,971	6
1826,	818		163,852	
1827,	1068		221,707	7
1828,	922		201,338	
1829,	359		82,031	
1830,	457		96,265	
1831,	635		135,139	3
1832,	994		219,380	5
1833,	1133		256,333	2
1834,	1142		267,363	4
1835,	1148		276,813	2
1836,	991		244,404	1
1837,	1172		234,785	3
1838,	1172		248,022	6
1839,	1210		279,260	3

To this may be added one-fifth for silver that has not paid duties.

The first adit of importance driven into the mines was that of San Judas, which passed the wall of the vein of Zauricocha in the year 1794. By means of this adit, very rich ores were raised, especially from the king's mine. In the year 1808, the present deep adit, from which so much was expected, was begun; for covering the expenses of constructing it, the body of miners imposed a duty of one real per marc on all silver melted in the government assay-office. This adit reached in 1830 the southwest edge of the metalliferous ground of Santa Rosa, up to which time the whole of its course had been in a hard rock. An auxiliary adit was then commenced, fifty-four feet above the level of the main one, and both of these works have been carried on until the present time. The ground above being better adapted for *driving in*, the upper adit is in advance of the lower, one thousand five hundred feet, and has arrived at the district of Cayac. The lower adit has reached the mines situated upon the vein of Zauricocha, without having cut a single vein or deposit of ore in its transit. There are several rich mines a little in advance of this adit, some of which have been hitherto drained by hand-pumps, and which must be shortly very much benefited by it; for, although they extend below the level of the adit, yet they will have some fifty feet of pump-lift less. It will excite some wonder that steam is not now employed in the draining of such valuable mines. It has, however, been tried; a few years previous to the revolution, four steam-engines, of thirty horse

power each, were brought out from England, and three of them put up in the districts of Santa Rosa, Cayac, and Zauracancha. That of Zauricocha was not set up, but the other three were worked with some success.

A level was driven from the engine-shaft of Santa Rosa, into the mines of Zauricocha, and rich ores were raised. The engine of Cayac did little more than assist that of Zauricocha, which, on account of the greater quantity of water, was barely able to do the work required of it. The expense incurred by the house of Abodia in this undertaking was upwards of six hundred thousand dollars, and at the moment when they had begun to receive a good return for their capital, the revolution broke out, and the troubles incident to it put a stop to their work, and left them with that amount of loss. Subsequently, at the close of the war, the engine of Santa Rosa was again put in operation; and in parts of the years 1826 and 1827, a considerable quantity of silver was produced, by means of the drainage effected by it.

Some abortive attempts were made to use the engine of Zauricocha, from 1829 to 1833; but since the latter period they have all been abandoned, as unserviceable.

The establishments for grinding and amalgamating the ores are situated at from one mile to three leagues from the mines: those nearest the town are deficient in water for several months in the year. The construction of all these mills is rude, and much power is lost. A mill will grind two hundred boxes of the hardest ore, if it have a constant stream of water. The amalgamation of the ore with mercury is effected by its being trodden by horses in circular enclosures, containing from five to ten boxes. The consumption of mercury, including mechanical and chemical loss, is about one pound for each marc of silver produced.

No attempts have yet been made at roasting any of the ores.

Coal mines are met with in various parts of the country, at the distance of from two to seven leagues; the price is one real for an arroba, but might be much reduced if the business were properly attended to.

Various plans have been formed at Lima, and in England, to purchase and work these mines, but with what success is very uncertain; the attempts have generally been supposed to have resulted in a loss. Speculation is always rife in search of these valuable ores, and prospects of great gain are invariably held out to those who engage in them; but there is much difficulty in getting the business into successful operation. The great error committed by all the English companies

established in 1825, for working mines in Spanish America, was in saddling themselves with great numbers of people, engaged at high salaries, and workmen at extravagant wages; the expenses attending this force swallowed up much of the funds before any work was begun. These included not only inspectors and mining-captains, but artisans, all of whom were sent from England. From a total change of life and circumstances, the mining-captains and artisans almost invariably turned out in a short time drunkards, and became good for nothing. In some cases miners were brought out, and these turned out still more worthless than either of the two former classes. They, indeed, did more work than the Indians, but their wages were higher, and the expenses for their importation in addition, made them cost much more.

According to the laws of Peru, the silver produced in this department must be sent to the government assay-office, to be melted into bars, and thence to the mint at Lima to be coined. The usual price of silver as it comes from the mine, is from seven dollars six reals, to seven dollars seven reals per marc. If remitted to Lima on account of the miner, it yields him about eight dollars one real per marc.

The duties it pays are six dollars per bar of two hundred and ten marcs to the assay-master, one real per marc for the public works of the Cerro, and one real per marc to government.

The mint price is eight dollars two maravedis per marc of eleven pennyweights fine.

Within three leagues of Pasco, on an extensive plain, there stands an isolated hill of porphyry, called Raco. From this hill are cut the stones used in grinding the ores, which are from two and a half to three varas in diameter, and from eighteen to twenty-four inches in thickness. The cost for delivering them at the foot of the hill is ten dollars for every quarter of a vara in their diameter, and the expense of drawing them to the mills varies from seventy to two hundred dollars, according to the distance.*

In 1840, several new attempts were about to be made in mining speculations.

The great difficulty to secure success seems to be in providing for the proper drainage, which the present adit will not accomplish alone, and great advantages might be derived from steam-power properly employed to free the mines of water. The owners of the mines are always desirous of inserting in the contracts, that they shall not have

* Most of the above facts are derived from a person who had long resided on the spot, and been engaged in various mining operations.

any water to raise, as this is the most expensive part of the process: the ore is very rapidly mined, after the water is drained off. The remuneration given to the proprietors of the steam-engines, is one-fifth of the ore raised; this was the sum paid to the old company, and the same was stipulated to be paid to the parties who undertook the same work in 1829.

Mines are to be bought at all times, on reasonable terms; for the miners often desire to retire from business, or wish to sell for the sake of profit, or are not able to carry them on from want of capital. There is, however, one difficulty a purchaser has to contend with, for the mines are almost always held in small shares among a number of relatives, many of whom refuse to sell their small interest. This makes the mines less desirable property, as difficulties almost invariably occur with these small proprietors.

No miner who has worked with reasonable prudence, steadiness, and a sufficient capital, has failed to do well since the year 1833. The produce of the mines of the Cerro from that time, has not varied much from one year to another, as will be seen by the table heretofore given. The undertakings which have been carried on upon an extensive scale, are those which have prospered most. There were many difficulties that the first mining companies had to encounter, that others need not again apprehend; the local interests are better understood and would be more respected; a better knowledge of the people prevails, and of the modes of mining; and the people themselves have lost some of their prejudices against foreigners. Persons may now be obtained to assist in the direction as well as to afford advice to the agents who may be entrusted with the affairs of the company, so that the prospects of success in the operations are decidedly more favourable than they were fifteen years ago. But although the actual operation of mining may be more advantageous, yet the country in its political and commercial character has very much deteriorated, and it is to be apprehended, that but little capital will be invested in it until there is a great change in its rulers as well as in its people, and until government, the laws, and good order, become as well established as they are in Chili. All the friends of Peru, seem, however, to be well satisfied, from appearances, that the day is not far distant when she will see the restoration of permanent tranquillity.

To return, after this digression, to our party: they had much agreeable conversation with the Chilian officers, and passed a pleasant evening. As I have before spoken of the accommodations, it is needless to say that they were not improved.

On the morning of the 24th, the thermometer stood at 36° in the

hut, and on the rivulet there was ice one-fourth of an inch thick. Mr. Brackenridge gathered seeds here of a curious species of Cactus, which grows plentifully all over the mountains in dense tufts; from the quantities of down or fine hair upon it, it has the appearance at a distance of a white sheep, so much so that a group of them was sometimes mistaken for a flock.

Although Casa Cancha was a wretched hovel, and had every thing in it to disgust, yet the situation was one of great beauty. In the stream that flowed near it, were fish of from six to eight inches in length, but none of these were taken, as the party was not provided with fishing-tackle.

When the time came for their departure, they were glad to bid adieu to the place, and to begin their ascent to the top of the ridge. They rode two leagues to the source of the stream, which is near the summit of the ridge. At a short distance from their path was the line of perpetual snow. They found the ground hard frozen as the snow was approached, and almost bare of vegetation, only a few stunted spears of grass occurring here and there; even this appeared to be wanting in the bare spots above the snow line. The snow was but a thin covering, its surface was hardened, and its lower margin formed a perfectly unbroken horizontal line, along the face of the mountain. This was not apparently the case on the other ridges, for the snow lay there in hollows, and sometimes descended, as before remarked, below the path.

In the alpine lakes was a species of Myriophyllum, the same as was met with at Culnai, three thousand feet below. Dr. Pickering found an ammonite here.

They descended rapidly on the western declivity; the scenery was beautiful, and they had enough employment in collecting specimens. Two large parties were met, on the route, the one of loaded mules, the other of several genteel travellers, among whom were females, accompanied by several servants well armed. In the afternoon they reached a solitary hut, at a place called Chicrine, situated at the foot of La Vinda, and kept by an old woman with one eye; she proved very much the reverse of their hostess at Casa Cancha, being very cleanly; here they passed the night comfortably.

A Frenchman, who was now passing for a native, and was on his way to Pasco, with his servant, joined them at Chicrine. Being invited to partake of supper, he accepted, and did ample justice to the meal; but when he had finished, contrary to the usual politeness of his countrymen, he told them he had never eaten a worse meal in his life.

After this remark, a belief was entertained that his saddle-bags contained edibles, and he was accordingly plied with questions until he confessed he had a loaf of bread: this proved quite acceptable, and a triumph over their fellow-lodger, who promised them a farther treat in the morning upon some fine chocolate.

On the morning of the 25th, the Frenchman departed early, and forgot all about his fine chocolate. They regretted to hear, shortly after their arrival at Lima, that he had been robbed and murdered on his return.

Our party set out early, and after an hour's ride reached Culnai, where the villagers were busy gathering in their potatoes. There were also several patches of Oxalis cunata, Tropæolum tuberosum, and a species of Basella. The two former when cooked were well-tasted, and all of them are much esteemed by the natives. These patches are enclosed by low stone dikes; the plants as they advance are earthed up, as we do potatoes, in the early part of the season; irrigation is necessary, as the soil is light and open, and consists chiefly of decayed rock and vegetable mould. Here some very interesting seeds and roots of a species of Alstrœmeria were gathered.

Culnai and Baños are about on the same level, ten thousand feet above the sea, and are the highest points of cultivation; they are both distant from the crest, by the route of the water-course, about nine miles.

Dr. Pickering having preceded the party on foot, reached Culnai after nine o'clock, when he entered a store and was received with the utmost cordiality; a meal was at once prepared for him, consisting of eggs and potatoes, called chupe in the country, which was kindly tendered; the landlord was very inquisitive, and examined his budget, calling the attention of the bystanders to it; his charge was reasonable, and he gave the doctor a hearty salutation at parting, with the "Adios per Dios."

At dark the party was reunited at Obrajillo. Those who arrived first witnessed the slaughtering of a bullock in the square, on which occasion great numbers of condors and buzzards were collected in the air above. The latter bird is seldom seen higher up than Yaso. They stopped at the posada, which they found occupied by the company of Chilian troops whom they had met at Casa Cancha, and in consequence they were obliged to take up with a filthy hut.

At Obrajillo good crops of Indian corn, rye, and beans are raised; but none of these grow at a greater altitude.

A singular and rather amusing custom was witnessed in the morning, which does not speak much for the gallantry of the male population.

A town officer was seen strutting with a spear about the public square, calling all the women out to come and sweep it. They soon made their appearance, and were not long in creating a prodigious dust. They swept the dirt up into small heaps; then taking their coarse shawls from their shoulders, they spread them upon the ground and put the dirt they had collected into them, to be carried away.

The Chilian officers called upon our gentlemen with offers of service, and were very civil and obliging.

At Obrajillo it was said that the wealthy men of the place kept very quiet, being much alarmed at the presence of the Chilians.

The guides now demanded a settlement, but requested their money might be kept for them until the party reached Lima, as they certainly would be robbed if they took it themselves. This incident proves how little security there is in this country, for persons of any class having any thing valuable about them.

The preparations that had been made in the town were for a festival, and the guides were disinclined to start for Lima. A little bribery, however, and reminding them that one of the greatest feasts in the Catholic church, that of Corpus Christi, was near at hand, induced them to go forward.

On their way from Obrajillo, which they left at an early hour, they met a bridal party on horseback. The bridegroom's hat and person were decorated with carnations and pinks; the bride and bridesmaid carried the same flowers, which they presented to our gentlemen in passing. After a hard day's ride they reached Taso, and took up their quarters in the porch of the posthouse; the landlord and post-master's absence was now accounted for, by saying that he had gone to church, but would soon be back; he of course did not come, nor was he expected by our gentlemen. They in consequence fared badly, for they had nothing to eat. They found here a gentleman who had been robbed the day before, by three persons in masks; they had treated him with great politeness, only proposing exchanges to his disadvantage; he had nothing else to complain of; they took his purse, watch, spurs, and a drink of his brandy. Much to their surprise, the guides, who had been so scrupulous about their money, showed no signs of alarm. A new difficulty arose with them: they had been informed that a conscription was going on, and they were afraid to proceed, lest they should lose their liberty; but the assurance that they would be protected while with the party, satisfied them.

The frequency of murder, highway robbery, and a constant resort to the cuchillo, has not been exaggerated in the accounts of Lower Peru.

On the morning of the 27th they again set out, having prepared

themselves to encounter any attack. The guides, knowing well the dangers that were to be apprehended, showed much solicitude about keeping the company together.

They reached Yanga without accident, and finding the posada occupied by a party of soldiers, and a recruiting officer, they were directed to a house with a porch, but they found it shut up. They therefore, being assured that the owner would soon return, deposited the saddles, &c., in the porch. Soon after, a woman appeared, and on being informed of their situation, and that they had fasted for two days, she set about providing for their supper, apparently from Christian motives, for during the process she crossed herself several times. She proved to be the owner of the estate, was somewhat advanced in life, managed her own affairs, and was seemingly well adapted to encounter the roughness of the times. The heiress, a little girl, (Angelita by name,) came galloping on a horse, driving the cattle before her, with the air of a veteran, having command over both the animal she rode, and those she drove; they were not much struck with her beauty, for her well-plastered face, and wide-spreading and matted hair, gave her the appearance of an elf; but she was a specimen of Peruvian nobility. Their supper was good, and they were permitted to lie on the clay floor, in the house.

They paid the usual price for the accommodations. In the morning, before their departure, they purchased fifty oranges for twelve and a half cents (a real), it being stipulated, however, that they should be gathered by themselves. These served to refresh them while passing over the barren track (described in their ascent) of four leagues. They were overtaken by their Chilian friends, and the troop, when their minds were relieved of the apprehensions of robberies.

Caballeros was reached at an early hour, and here they intended to stop on account of their horses; but their Chilian friends persuaded them to pursue their journey to Lima, promising to render them assistance, in case they should need it. At Caballeros they witnessed a fight between a turkey and a game-cock; strife, indeed, appears to be a constant amusement with the Peruvians, and scenes of this kind alone seem to interest the public. After a long day's journey of twelve leagues, they reached Lima at eight o'clock, very much fatigued, and happy to return to the comforts of civilized life.

The only novelty they met with during the day's ride was a Guacho on horseback, carrying a pine board before him,—a proof of the scarcity of such articles in Peru, and the value that is set upon them.

This journey, although attended with much fatigue and some disappointment, from not having accomplished their object entirely, that of

reaching the wooded district of the Eastern slope of the Andes, yet was very productive of results in the botanical department.

The great difference of elevation, and the variation in climate consequent thereon, would lead one to expect a greater variety in the vegetation than was actually found. Forests were no where met with, nor were any of the palm tribe seen; very few of the many tropical plants were perceived even on the coast. The smaller shrubs were seldom found, except in the lower region, where their limit is circumscribed to the well-watered district. Thickets are very rare, and in the higher regions appear to be altogether wanting. The vegetation of Peru on the whole is characterized by an air of tameness, indicating but a slight change of season, and has been classed into four distinct botanical regions, which are easily distinguished; they will claim particular attention, and afford much interesting matter, in the Botanical Report.

The geological region passed over was also one of much interest, and from the observations of the gentlemen, the following information has been derived.

The geological structure, as far as their observations went, corresponds to that of North Chili, with the exception of a narrow belt of sedimentary rocks along the sea-coast, west of the granitic range, which is wanting in that country. This belt includes the island of San Lorenzo, and others, as well as the coast itself, to the extent of from seven to ten miles from the sea-beach. These sedimentary rocks are argillaceous, distinctly stratified, and more or less slaty, the layers being in many places discoloured by the red oxide of iron. In other places they appeared of a black colour, as if in the vicinity of coal-beds, of which the existence was spoken of, but we did not discover any unequivocal traces of this substance. Some conspicuous examples of faults were noticed by Mr. Dana, along the coast of San Lorenzo. Many minerals were also found by this gentleman; among them gypsum was of frequent occurrence, as well as some fossils: for fuller information, reference is made to the Geological Report.

The hills and mountains to the eastward, joining the above sedimentary rocks, are exclusively of granite, which extends in width to the distance of forty-five geographical miles beyond Yaso. In places, it has very much the appearance of a stratified rock; it is much broken and variable in its character, so as to render it somewhat deceptive. Dr. Pickering observes, that this peculiar character or appearance is owing to the slow process of the decomposition of the rock in this dry climate, and which would in other places, subject to the ordinary

fluctuations of seasons, be covered with several feet of earth. The same reasons will account for the duration of the Inca villages that cover many of the hills, and which a copious shower would entirely wash away. The granite on its eastern side was coarse-grained, presenting more of the ordinary appearance of that rock.

Immediately eastward of the granite district commence the trap rocks, consisting for the most part of porphyry. Dr. Pickering traced the line of junction for some miles, the hills on one side being of granite, on the other porphyry. The eastern limit of the trap region is supposed to be distant some twenty miles from the western. The porphyry resembles the Swedish, and that in the vicinity of Boston. Many porphyry pebbles, supposed to be of this formation, were found on the beach at Callao, having, it is to be presumed, been carried there by the action of the water-courses.

Next comes the plateau of the Cordilleras, which is formed of sedimentary rocks; this includes the silver mines, and the highest peaks, and is apparently of the same age as the coast. Much of the rock is argillaceous. At Baños an argillaceous limestone was used for burning, and quantities of gypsum, used for manure, was brought from the vicinity of Casa Cancha, some twenty miles to the north. Conglomerates prevailed over a great portion of the crest the party traversed. The included pebbles were observed to be of regular shape, smooth and polished as if sea-washed. All the party remarked the smoothness of the pebbles in the torrents of the Cordilleras, which had a strong resemblance to those on the sea-beach. From the information relative to the mines in the Cerro de Pasco, it will have been perceived that blue limestone, slate, and sandstone, exist in that vicinity; and at the silver mines at Alpamarca, a compact bluish rock was observed, probably the limestone; it was not, however, ascertained whether it was argillaceous or a pure limestone. Dr. Pickering remarks, that it contained numerous hard seams of opaque calcareous spar, with somewhat the lustre of "satin spar." Sandstone with small pebbles was not uncommon.

The bare spots of the higher peaks did not present the variety of colour of the Chilian Andes, but had a uniform dark slaty hue. Many incrustations were seen forming on the rocks and plants: this was found to be gypsum.

Previous to our departure, I felt desirous of having an excursion made to the ruins of Pachacamac; and having heard that the landing was easy and good, on the inside of the island, I sent the tender Flying-Fish thither, with Dr. Pickering and Lieutenant Underwood.

Pachacamac is one of the most interesting spots on this part of the coast, although it is said it will not compare with many others in various parts of the country, especially at Cusco.

They left Callao on the afternoon of the 28th of June, and were at anchor about midnight abreast of the place. At daylight the surf was found so heavy as to render it dangerous to land in the whale-boat. By the perseverance of the officers, a raft was formed of the India-rubber mattrasses and oars; two balsas were also provided. Lieutenant Underwood made the first attempt, and paddled himself into the rollers, the first one of which threw him and the balsas end over end. Shortly after, the raft was seen bottom up, the oar broken, and the fragments sticking up in various directions; but he was missing. He soon, however, made his appearance at some distance, and just as he reached the raft, a second sea broke over him, and he again disappeared, apparently much exhausted. When the third roller broke over him, he was considered for a few moments as lost; and it was no small relief to see him crawling from the water up on the beach, a short time afterwards. The raft was now pulled back to the tender by the line. In consequence of the ill success of this experiment, it was determined to make a trial in the whale-boat, which succeeded without accident. Dr. Pickering and Lieutenant Underwood now proceeded to the temple. At the base of the hills, they found a few cabins of Indians, who stated that they had not chosen the proper place for landing.

The Temple of Pachacamac, or Castle, as it is called by the Indians, is on the summit of a hill, with three terraces; the view of it from the north is somewhat like that of the Pyramid of Cholula, given by Humboldt, except that the flanks were perpendicular.

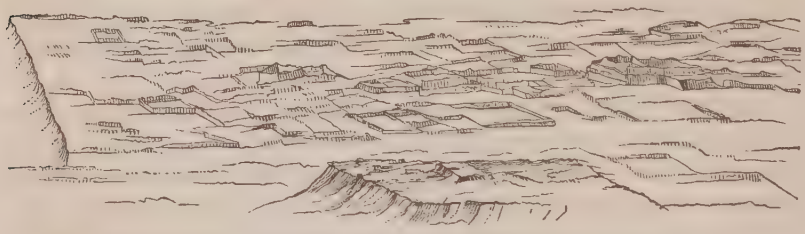
The whole height of the hill is two hundred and fifty feet, that of the mason-work, eighty; the form is rectangular, the base being five hundred by four hundred feet. At the southeastern extremity, the three distinct terraces are not so perceptible, and the declivity is more gentle. The walls, where great strength was required to support the earth, were built of unhewn square blocks of rock; these were cased with sun-dried brick (adobes), which were covered with a coating of clay or plaster, and stained or painted of a reddish colour.

TEMPLE OF PACHACAMAC.

A range of square brick pilasters projected from the uppermost wall, facing the sea, evidently belonging originally to the interior of a large apartment. These pilasters gave it the aspect of an Egyptian structure. In no other Peruvian antiquities have pilasters been seen by us. On one of the northern terraces were also remains of apartments; here the brick appeared more friable, owing to a greater proportion of sand; where they retained their shape, their dimensions were nine inches in width by six inches deep, varying in height from nine inches to two feet; and they were laid so as to break joint, though not always in a workmanlike manner.

The remains of the town occupy some undulating ground, of less elevation, a quarter of a mile to the northward. This also forms a rectangle, one-fifth by one-third of a mile in size; through the middle runs lengthwise a straight street, twenty feet in width. The walls of some of the ruins are thirty feet high, and cross each other at right angles. The buildings were apparently connected together, except where the streets intervened. The larger areas were again divided by thinner partitions, and one of them was observed to contain four rectangular pits, the plastering of which appeared quite fresh.

The annexed wood-cut will give a representation of the ground, &c.; both are from sketches made by Lieutenant Underwood.



GROUND PLAN OF PACHACAMAC.

No traces of doors or windows towards the streets could be discovered, nor indeed any where else. The walls were exclusively of sun-dried brick, and their direction, northeast and southwest, the same as those of the temple, which fronted the sea.

Some graves were observed to the southward of the temple, but the principal burying-ground was between the temple and town. Some of the graves were rectangular pits, lined with a dry wall of stone, and covered with layers of reeds and canes, on which the earth was filled in to the depth of a foot or more, so as to be even with the surface. The skulls brought from this place were of various characters; the majority of them presented the vertical elevation, or raised occiput, the usual characteristic of the ancient Peruvians, while others

had the forehead and top of the head depressed. Eight of these were obtained, and are now deposited at Washington. The bodies were found enveloped in cloth of various qualities, and a variety in its colours still existed.

Various utensils and other articles were found, which seemed to denote the occupation of the individual: wooden needles and weaving utensils; netting made in the usual style; a sling; cordage of different kinds; a sort of coarse basket; fragments of pottery, and plated stirrups. They also found various vegetable substances: husks of Indian corn, with ears of two varieties, one with the grain slightly pointed, the other, the short and black variety, which is still very commonly cultivated; cotton seeds; small bunches of wool; gourd-shells, with a square hole cut out, precisely as is done at present. These furnished evidence of the style of the articles manufactured before the arrival of the Spaniards, and of the cultivation of the vegetable products; when to these we add the native tuberous roots (among them the potato) cultivated in the mountains, and the animals found domesticated, viz., the llama, dog, and Guinea-pig, and the knowledge of at least one metal, we may judge what has since been acquired.

The embarkation of the party was attended with risk, but they all got on board the Flying-Fish without accident.

Mr. Knox also visited the island of Pachacamac, during the day, but did not succeed in finding any graves. He obtained, however, some interesting geological specimens.

In a few hours they again reached the anchorage at Callao.

CHURCH AT BAÑOS.

CHAPTER XIV.

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CHAPTER XIV.

POLITICAL HISTORY OF PERU.

1839.

The history of Peru, during the last twenty years, is involved in even more obscurity than that of Chili. This arises from the frequent change of rulers, and the consequent alterations in policy and government. The history may be said to be merged in biographical memoirs of its several rulers, who have, without an exception, acted for self-aggrandizement, without ever looking to the benefit of their country, its peace, or happiness. They have, in their public decrees and acts, been lavish and prodigal of the words honour, liberty, justice, &c., in order to extol themselves, and decry their opponents. Yet, without exception, the moment they have attained power, they have pursued the very course they before reprobated, and the country has continued to suffer.

The victory of Ayacucho, gained by General Sucre in December, 1824, put an end to the war of the revolution, and placed the whole country in the possession of the patriots, with the exception of Callao. On the surrender of that fortress, January 7th, 1826, Spanish authority ceased to exist in South America. General Bolivar was at this time President of Colombia, and Dictator of Peru, invested as the latter with constitutional powers, but exercising unlimited authority. Through his means and the troops of Colombia, the liberation of Peru had been effected; and after that event, many of these troops were quartered in Lima, much to the annoyance of the Peruvians, who were anxious to get rid of the military, and the expense of maintaining them. Their presence, and the cost of supporting them, became the more odious, because it was believed they were retained to support the arbitrary power of the Dictator. In the beginning of the year 1827, the Peruvians, through their intrigues, effected a revolt among the Colombian

troops, who made prisoners of their officers, put an end to the authority of the Dictator Bolivar, and freed Peru from the presence, as well as the expense, of foreign troops.

Immediately after this event, General La Mar was elected and proclaimed President of Peru. He was a native of Guayaquil, reputed to be a mild and just man, had been brought up in the Spanish army, and was attached to General San Martin; but he appears to have been ill adapted to rule over such a people as the Peruvians. At first his election was popular, and his name took the place of that of Bolivar over all the gates, &c., in the City of Kings.

At this change every demonstration of joy was witnessed. The Colombian troops were sent to the neighbourhood of Guayaquil, when they attempted a revolution against the Colombian authorities in Guaymas and Quito, (about forming the republic of Equador,) in which they were partially successful, but were soon put down by General Flores. These acts led to hostilities between Colombia and Peru, and in the beginning of 1828, La Mar marched to the frontiers of Colombia, without any declaration of war, with a part of the Peruvian forces, leaving General Gamarra, a native of Cusco, who had been the cause of so much revolution and bloodshed in Peru, to follow with a second division of Peruvian troops. At this time General Santa Cruz (who had been for a short time President of Peru,) was President of Bolivia, and he, together with Gamarra and Lafuente, conspired to overthrow La Mar, after which Santa Cruz was to be proclaimed President of Peru, Gamarra Vice-President, and Lafuente Minister of War.

With this plan in view, Gamarra joined La Mar on the frontiers of Colombia. The battle of Portete took place soon afterwards, when, in consequence of the treachery or cowardice of Gamarra, the Peruvians were beaten, and capitulated on the field of battle to General Sucre, who was opposed to them with a much inferior force of Colombians. A treaty was signed, but was soon violated by the Peruvians, and hostilities again commenced. Another division of the Peruvian army, one thousand five hundred strong, which had been acting in Bolivia, embarked from Arica, under Lafuente, to join La Mar, in the north. They arrived at Callao, and were disembarked against La Mar's orders, and shortly after Lafuente overthrew the government at Lima, whilst Gamarra arrested La Mar in the north, and banished him to Costa Rica, in Central America, where he shortly afterwards died.

Lafuente ejected all the officials, and assumed the government in the name of Gamarra.

Gamarra and Lafuente, having thus secured the army and govern-

ment, overlooked Santa Cruz, and got themselves confirmed, the former as President, the latter as Vice-President of Peru. This is the secret and chief cause of the great animosity and personal hatred which existed between Gamarra and Santa Cruz, and which has led to several years of revolutions and counter-revolutions in Peru, as well as to the wars of Bolivia.

In 1829, Gamarra was elected President for four years, and is the only chief magistrate who has retained his office to the end of the term for which he was chosen. Lafuente was at the same time elected Vice-President. During the administration of Gamarra, there were several attempts to revolutionize the country, but they were suppressed.

In the year 1831, Gamarra being on the frontiers of Bolivia, with the army, he became suspicious that Lafuente was concerned in some of the movements, and gave orders to seize him. Lafuente had little notice of it, but when the party detached for the purpose arrived at his quarters at night, Señora Lafuente, his wife, bolted the door, to give time for her husband to escape. The officer in command, before going to the apartment, had stationed guards around the square, with orders to shoot any one whom they saw escaping. On arriving at the door of the chamber, he found it bolted, and ordered it to be opened. This was done by Señora Lafuente, after her husband had effected his escape through the window. The officer, eager in pursuit, followed, but mistaking the course of flight, got upon the roofs of the houses, where he was seen by his own soldiers, who, true to their orders, fired and shot him dead. Lafuente, thus saved by the good management of his wife, escaped to Callao, where he found an asylum on board the United States ship St. Louis, then lying in the roads. Thence he went to Chili, and from Chili to Bolivia, where he became reconciled to Santa Cruz, and endeavoured to obtain aid from him to overthrow Gamarra.

Another conspiracy is said to have been discovered by Gamarra in 1832, in which Major Rosel was suspected of being the leader. He was then commander of a regiment, and the plot was believed to involve the seizure of the President's person. Some colour is supposed to have been given to this suspicion by the fact that Rosel drilled his men at an unusual hour, and apparently kept them in readiness for active duty. On the 18th of January, while at his quarters in the evening, he was seized, disarmed, tried on the spot, and shot on the following morning. It is believed that this, as well as many other supposed conspiracies, existed only in Gamarra's own fears or suspicions. The summary manner, however, in which he treated all who showed any thing approaching a rebellious spirit, kept the disaffected in subjection. Among other persons, his suspicions fell upon the President of the

Senate and acting Vice-President, Manuel Telluria, who was seized, carried to Callao, forced on board a small vessel of war, and transported to Panama.

In July, 1833, just at the close of Gamarra's term of office, the convention which had been provided for by the Constitution of 1828, was convoked to meet at Lima, there to amend the constitution. It was still in session when his term expired, on the 20th December, 1833. On the 19th he sent in his resignation to the National Convention, and issued an address to the people, announcing that the wished-for day had arrived when he could retire to private life. This was well known to be insincere, for while he was making these protestations, he was doing every thing in his power to secure his re-election. Gamarra had become extremely unpopular, and throughout the country was accused of injustice and tyranny. News of revolts were reaching the capital (Lima) every day, both from the north and south: only a short time before his term expired, he had gone south, to quell one at Ayacucho.

At the time of the expiration of his term of office, the electoral college for the choice of a president had not met, in consequence of some informality in the election of its members; and as no constitutional election could be obtained, the Convention, with the sanction of Gamarra, balloted for a provisional president, until the election should take place, and the choice fell upon General Don Luiz Orbejoso, in opposition to Bermudez, who was a creature of Gamarra's, Gamarra himself, by the constitution, not being re-eligible.

Soon after Orbejoso was elected, Bermudez, instigated and aided by Gamarra, on a plea of the unconstitutionality of the election, effected a revolution in Lima. This took place on the 18th of January, 1834, when the Convention was dispersed at the point of the bayonet; many lives were lost, and Orbejoso fled to the castle of Callao. The people of Lima on this occasion showed some spirit, and took part in the affray, which was quite unlooked for, as they had generally been in the habit of retiring to their houses, and allowing the contending parties to settle the strife. In a few days they rose upon the soldiers of Bermudez, whom they compelled to evacuate the city and retire beyond the mountains, where they soon after capitulated, and Orbejoso's authority was re-established. Gamarra fled to Bolivia, and was protected by Santa Cruz.

During this insurrection, Lafuente again returned to Peru, and, being detected or suspected of intriguing to get himself named President, was banished by Orbejoso. He retired to Chili to await events.

In February, 1835, during Orbejoso's absence to the south, General Salaverry, who was in command of the Castle of Callao, revolted,

seized upon the government, and declared himself Supreme Chief. In June, he issued a decree appointing a council of state, consisting of twenty-four members, of which he was president, and began to exercise the most despotic authority. Orbejoso had, in the mean time, sent to demand aid of Santa Cruz to suppress the insurrection. The council of government had, during the previous rebellion of Bermudez, invested Orbejoso with extraordinary powers, especially authorizing him to call upon Santa Cruz, President of Bolivia, for aid to quell the insurrection in Peru; but Bermudez had capitulated before Santa Cruz was called upon to act. After the rebellion of Salaverry, Orbejoso assumed those powers. In the mean time, Salaverry continued his acts of cruelty and oppression.

Gamarra, always on the watch, now made his appearance, in the hopes of again raising himself to power. He had fled from Bolivia, and had collected about fifteen hundred men, to make war upon Orbejoso, when he issued a proclamation in May, 1835. Salaverry, however, knowing that Gamarra was entirely influenced by interested motives, declared him an outlaw, and prepared to march against him; but on learning that Santa Cruz was marching on Peru with three thousand Bolivian troops, he immediately treated with Gamarra, and they agreed to act together against Orbejoso and his new ally. Before they could unite their forces, Santa Cruz attacked and completely routed Gamarra's troops: he fled almost alone to Lima, where Salaverry soon after arrested him and sent him to Central America, whence he proceeded to Chili, to carry on his intrigues to keep Peru in a state of civil war. Salaverry now marched against Santa Cruz; they met near Arequipa, and the battle of Socabaya was fought, where Salaverry was completely defeated, and taken prisoner while attempting to gain his vessels at Islay. He was immediately tried by a military commission, and with his principal officers shot at Arequipa. The career of Salaverry was short, but unexampled in Peru for its activity and energy. His fate excited no sympathy, for he had committed some of the most barbarous acts, executing persons without trial, upon the slightest suspicion of being disaffected to his authority.

Orbejoso, on being reinstated by the aid of Santa Cruz, and the revolt suppressed, called an assembly of the deputies at the town of Sicuani, and set about punishing all who had taken part or served in any manner during the rebellion of Salaverry.

The nullification of the treaty with Chili is said to have been brought about by the advice of Gavia del Rio, who was supposed to be somewhat under the influence of Santa Cruz. He made use of the

argument, that it contained stipulations injurious to, and contrary to the true policy of Peru, which was to endeavour to promote a free intercourse with all nations, a policy which outweighed all the advantages that could be derived from the treaty with Chili.

In 1836, General Herrera was received as ambassador from Bolivia by Orbejoso, and with General Moran, who commanded the troops, seems to have exerted a great influence over Orbejoso. He entered into an offensive and defensive alliance with Bolivia, which gave all the ascendency to Bolivia, or rather to Santa Cruz, engaging that the Bolivian army should remain in Peru until peace should be established at the north. From this it was evident that Peru was ruled by strangers, and her interests were forgotten. The people, therefore, soon became dissatisfied with the administration of Orbejoso, and when he ordered a new election of deputies, they in many of the towns refused to vote, believing that his real object was to secure himself a re-election by the Assembly.

He dismembered the eight provinces of Peru, by declaring that four of them should be known hereafter under the name of South Peru, composed of the departments of Arequipa, Ayacucho, Cusco, and Puno. Nothing can be more absurd than the way in which he seems to have conducted the government, and the bombastic and foolish tone of his decrees, wherein he is styled, or styles himself, "Citizen, Don Louis Orbejoso, Great Hero and meritorious General of Divisions, and Grand Marshal of the State of South Peru."

The Assembly of Sicuani met on the 17th March, when it conferred upon Santa Cruz the title of Supreme Protector of South Peru, consisting of the four above mentioned provinces of Arequipa, Cusco, Ayacucho, and Puno. At the same time, every power was given him over the state, as well as the right to convene a legislature as soon as he should think proper. This was virtually extending his power over the half of Peru next bordering on Bolivia, and was the first step towards making him head of both states. The Assembly likewise bestowed great encomiums on the Bolivian army, awarding to them medals and thanks. On Santa Cruz it conferred the title of Invincible Pacificator of Peru; voted that an equestrian statue of him should be erected on the field of Socabaya, and that his portrait should be hung up in their hall, and in all the tribunals and public offices of the republic. The next act was to appoint a committee to wait upon Santa Cruz, to present him with the declaration of independence, and to invest him with the Supreme Protectorate, awarding to him likewise a salary of thirty thousand dollars a year for the expenses of his exalted situation.

On the 19th, the Assembly approved of the treaty entered into between Orbejoso and Santa Cruz.

The Assembly of Sicuani was but *four* days in session; and its whole object seems to have been to confer titles and honours on Santa Cruz, instead of looking into the affairs of the state. This must strike any one as having been a ridiculous farce; and it cannot be a matter of surprise that the South Americans should rather be retrograding than advancing, when we look upon acts like these.

On the 3d August, 1836, the Convention of Huara (which had been previously summoned) met. After being organized, it received messages from the provisional President, and the Supreme Protector by his plenipotentiary, who submitted three projects for an organic law for the purpose of uniting Peru and Bolivia under one head. It proposed to form them into the three federative states of Bolivia, North and South Peru, each to have a president, and all to be under the Supreme Protector, who was named for life. The chief difficulty the Convention had to overcome was, whether a successor to the Protector, in case of his death or infirmity, should be named, and whether Orbejoso should be the party. During the pendency of this question, Orbejoso sent word to the Assembly, through the minister, that they might desist from the considering him as a candidate to succeed the Protector. This great difficulty having been thus removed, the organic law was passed, organizing the four remaining provinces under the title of North Peru. At the same time, the act that had been passed by the Convention at Sicuani, establishing the state of South Peru, was confirmed. At this session, Orbejoso was made a grand marshal, the pay of that rank was voted to him, and also a clasp for a sword-belt set with diamonds, with one hundred thousand dollars in money. A monument to Santa Cruz in one of the Alamedas in Lima was provided for, with a gold sword inlaid with diamonds, and one hundred thousand dollars to his wife as pin-money. This convention was only in session *three* days. It may well be imagined what the people of Lima thought of these acts, by the fact that on the 13th August, Orbejoso returned to Lima, without receiving any attentions whatever. Orbejoso had previous to this time adopted the novel plan of chartering (aumdamiento) the government vessels of war, considering they had no longer any use for them; General Freyre, the former director of Chili, who it has been mentioned was banished from that country, and was residing in Lima, engaged the two frigates for the purpose of making a descent on Chili. All the Chilians who had been banished, united with him, and it is believed that Orbejoso favoured and aided the project by money as

well as advice. A similar belief was entertained in relation to Santa Cruz, although he thought proper to deny the charge.

Peru and Bolivia thus became one government, under the name of the Peru-Bolivian Confederation, and Santa Cruz was declared Supreme Protector for life, with almost unlimited authority. This was an unpopular measure in Peru, the people alleging that her independence had been bartered for foreign aid. There was little to unite her to Bolivia, no common interest, and but limited commercial intercourse to cement a union. Bolivia, on the other hand, saw herself involved in quarrels in which she had no interest; moreover, Chili and Equador became suspicious, and jealous of the ambitious projects of the Protector of the new Confederation; while the misunderstanding respecting the treaty, and the restrictions that were put on her commerce, tended to widen the breach with Chili.

The Protector, on his arrival in Lima, was received with great rejoicings, &c. One of his first acts was to impose a discriminating and additional duty on all goods introduced into the ports of the Confederation, when imported in vessels having touched at a Chilian port, with the ostensible object of encouraging a direct trade from Europe and the United States, to Peru and Bolivia. The Chilians took great offence at this act. Peru in her struggle for independence had received much assistance, first from Chili, and then from Colombia, and was in debt to both for the expense of the war. This very aid produced its usual consequences, by creating those feelings of hostility which the ungrateful indulge in towards their benefactors.

It soon became apparent that the vessels of war were chartered by General Freyre, who embarked in them with a number of the discontented Chilians who were in exile, and about two hundred soldiers. This was done secretly, but the Chilian consul-general contriving to get the information, as has been related, despatched a vessel to notify his government, before an embargo was laid. We have heretofore seen, in the chapter which treats of the affairs of Chili, how the whole affair was frustrated, and how Freyre and the others were taken prisoners.

The party in power in Chili had always been opposed to Santa Cruz personally, and believed that he had planned and aided the attempt to revolutionize Chili. Under pretence therefore of danger from the preponderating influence of the Peru-Bolivian Confederation, under so ambitious and intriguing a head, they resolved on war. For this purpose they deemed it necessary to secure the command of the sea, and they sent two vessels of war to Callao, ostensibly on a

friendly mission, but with secret orders to cut out the Peruvian vessels of war, then undergoing repairs in that port. This perfidious act was successfully perpetrated, and the next day Santa Cruz ordered the arrest of La Valle, the resident Chilian consul-general in Lima, but released him in an hour or two, and sent him his passport.

Negotiations were entered into, and resulted, as we have before seen, through the intercession of the English diplomatic agent, in a convention and a cessation of hostilities for four months. It was evident from the first that no peace would ensue; both parties had done wrong, and it is believed that neither wished for peace. Chili having now obtained command of the coast, saw no difficulty in carrying on the war. Accordingly, three thousand men were embarked, landed in South Peru, and marched for Arequipa, where, however, they were speedily cooped up, left without resources, and surrounded by superior forces, daily augmenting under Santa Cruz; who finding the war unpopular in Peru, was desirous of making peace, and waived all the advantages of his position to make a treaty, which was entered into whilst the troops were drawn up in order of battle. This treaty was highly honourable to both nations. By it the Chilians were allowed to re-embark, on condition of returning to their own country, and afterwards giving up the plundered vessels to Peru. The troops returned to Chili; but the Chilian government refused to ratify the treaty,—which is known as that of Paucarpata.

Santa Cruz now instituted the Legion of Honour, in order to reward all those who had served with him in his campaigns, and annexed a certain compensation, which amounted to an annual charge upon the state of fifty thousand dollars.

Great complaints were made by the Peruvians against Santa Cruz for appointing so many foreigners to office, and for inveigling the Peruvians, who were opposed to him into the country, and then placing them under surveillance. These measures gave great dissatisfaction, and made him so unpopular that the people were at once desirous of throwing off the connexion with Bolivia, which it was now evident Santa Cruz's ambition had brought about.

He had besides given public notice in writing to the consul-general of Great Britain, and of other nations, requesting them to communicate from time to time their views, and information relative to commercial matters. This, in the opinion of the Peruvians, had the effect of giving to foreigners undue participation in the government. Even his friends thought that he might have obtained all the information without calling upon them in so public a manner for it, and thus exciting the jealousy of the Peruvians. He also issued a decree opening the ports of Bolivia

and Peru to the Spanish flag. However wise the latter measure might have been in a commercial point of view, it was ill-timed, for the prejudices against the old Spaniards are yet extremely strong in South America, and especially in Peru.

Santa Cruz's policy seems to have been to attach foreigners to his person and government, and they for the most part spoke favourably of him; but as he gained ground with them he lost it with his countrymen, and those who were and ought to have been his supporters were disappointed and mortified to see him pursue such a course. The Peruvians are conceited, proud, and destitute of that education and knowledge which would enable them to understand the necessity of asking foreigners for advice respecting their commercial regulations.

Santa Cruz, believing himself firmly established in Peru, was desirous of seeking popularity abroad; and for this purpose wished to have it understood that he was disposed to encourage trade with foreign nations.

Chili again despatched to Peru the same troops, augmented by reinforcements, under the command of General Bulnes. With them, as in the former expedition, came the proscribed Peruvians, among whom was General Gamarra.

Previous to the arrival of the Chilian expedition, Orbejoso, who had been appointed, by Santa Cruz, President of North Peru, revolted against his authority, and declared the Confederation dissolved. In this he was joined by General Nieto. Orbejoso, however, opposed the Chilians, and declined their assistance, telling them that if they were seeking Santa Cruz, they might seek for him elsewhere. Bulnes replied that he must remain; disembarked his troops, and encamped near Lima. The next morning, as one of his regiments was removing to a more favourable position for water, Orbejoso thought that he intended an attack, and, determining to anticipate it, marched against him, ordering General Nieto to follow. The latter, wishing to play chief, kept back. Bulnes, finding himself unexpectedly attacked, ordered an advance on the Peruvians, drove them before him, and after the battle* entered Lima with his troops, where he maintained himself. Orbejoso, after his defeat under the walls of Lima, secreted himself in that city, and thence, in a few days, fled to the Castle of Callao, where he remained until Santa Cruz again entered Lima. He then embarked

* This was witnessed by many persons from the housetops and steeples, who represent it as little better than a massacre; scenes occurred that were revolting to the sight. The history of this so-called battle will be a dark spot on the escutcheons of both Chili and Peru, if the full details be ever given.

for Guayaquil, where he still remains. Nieto sought an asylum on board one of the foreign ships of war lying in the Bay of Callao, as has been customary in their revolutions.

The day after the Chilians entered Lima, Gamarra succeeded in getting himself proclaimed President of Peru, by a few of his minions under the bayonets of Chili, and exercised his authority as far as their influence extended.

At the time of these occurrences, Santa Cruz was in Bolivia, when, on learning the treachery of Orbejoso, and the occupation of Lima by the Chilians, he collected his forces in the valley of Jauja, and marched to join General Moran, called the Murat of Peru, who was encamped within three days' march of Lima, with three thousand men, and awaiting him. Santa Cruz approached Lima, after having effected his junction with Moran. He moved on, confident of success, with his well-appointed force, a host of marshals and generals in his suite, and boasted that the Chilians would soon be in a worse situation than when the treaty of Paucarpata was signed. Bulnes, on the approach of Santa Cruz, retired, leaving Lima the day before Santa Cruz entered it, embarked his troops in the fleet, and sailing north, landed near Huara, in the department of Truxillo. This much increased the confidence of the Peruvians, who now considered the Chilians as already captured. Believing that as the rains had commenced, the Chilians had gone into quarters for the winter, Santa Cruz determined to pursue them by land, with which intent he made forced marches, through fog and rain, and overtook the Chilian army at Huara, where he encamped in a strong position. He considered his enemy to be in so bad a plight, that he had so little doubt of overcoming them with ease, that it is said he wrote to his ministers at Lima, in imitation of Bonaparte, (whom he seems to have taken as his model,) "Ah! these Chilians, I have caught them!" His intention was to attack them as soon as his soldiers had rested after their fatiguing march. The Chilians did not give him leisure for this, but, to the surprise of Santa Cruz, attacked him in his trenches. One of the most sanguinary battles recorded in South American history ensued; Santa Cruz was signally defeated, and barely escaped with his life, accompanied by no more than twenty soldiers. His whole army was entirely cut up, two of his generals killed, and three taken prisoners. This battle decided the fate of the Peru-Bolivian Confederation. Santa Cruz was the first to take the news to Lima. He was joined there by Moran, whom he placed in the Castle of Callao, with orders to hold out four months, previous to which time he would bring relief, and reinstate

himself in authority. He was proceeding to Arequipa, when news reached him that General Ballevian, the Bolivian commander-in-chief, had declared against him in Bolivia, and also that General Velasco was named President; lastly, Arequipa, the faithful Arequipa, deserted him, with all his officers, with one or two exceptions. Every where his life was cried for; he had but time to mount his horse and fly to Islay, accompanied by General Miller, Cardeno, and Garcia del Rio, who still adhered to him. They were hotly pursued by a troop of cavalry, and arrived just in time to get on board the British sloop-of-war Samarang, which was lying in the roadstead. Here the Protector found a resting-place, and is said to have felt himself greatly relieved from the incessant troubles he had been engaged in for the last three years. Thus ended his political career. He was taken to Guayaquil, where he has since remained, forming new plans to involve his country in war, for his own personal aggrandizement. He had promised better for Peru than any other ruler before him, but his ambition destroyed all the plans he had formed for his country's good, and he ended by entailing upon her many difficulties and troubles, that will take a long time to recover from.

Bulnes, after his victory of Yungai, immediately embarked, and sailed for Callao, where he again disembarked, and took possession of Lima. Gamarra, as I have before said, was proclaimed President, by a Congress convoked by himself, which voted at the point of the bayonet. This has not been unusual in South America, and all the acts of the Congresses may in fact be called the sole will of the chief magistrate, under whatever title they may be issued. Besides naming Gamarra President, this Congress inflicted upon the people a new constitution by his direction.

The battle of Yungai, which took place on the 20th January, 1839, concluded the war with Santa Cruz, and entirely overthrew his power by the loss of his whole army (in these countries a very few troops obtain the name). In this battle there were four thousand two hundred Chilians, and four thousand five hundred Peru-Bolivians engaged. Fifteen hundred of the former, and two thousand of the latter, were left dead on the field; the wounded Chilians were numerous, but those of the Peru-Bolivians were said to have been put to death in the rout which ensued. The battle began at six o'clock in the morning, and was contested for six and a half hours. The Peru-Bolivians complain that at its commencement great advantages were lost to them by the conduct of Colonel Guilaste, who with seven hundred men, betrayed his trust, and early decided the fate of the battle. It is said that every

soldier, on both sides, fought "upon his own hook," and continued the battle as long as he chose, the officers having little or no control over their men. Indeed, I heard it repeatedly said, that the troops commanded the officers, and not the officers the troops. If it had not been so, many of the acts of cruelty and barbarity that are represented upon good authority as having occurred, would not have taken place. These I cannot but consider as destroying all the glory of the day to the Chilians, whose avowed object in coming to Peru, was to make war against Santa Cruz, and not against the Peruvians.

Gamarra was now established firmly in Peru, and the Confederation broken up. Bulnes and his forces returned to Chili, where he has since been elevated to the highest office of the republic (that of President). Thus ended the year 1839.

In 1840, Bolivia, after the overthrow of Santa Cruz, became the prey of rival factions, and Gamarra was invited to come with an armed force and settle their disputes. No sooner, however, had he reached Bolivia, than the rival chiefs, forgetting their own quarrels, united, for their animosity against him exceeded their own little jealousies. They attacked him at disadvantage, and completely routed his forces; he himself was killed in his flight from the field of battle. The Bolivians in their turn now invaded Peru, but through the mediation of Chili, a peace was brought about, which left both Peru and Bolivia in a state of great anarchy and confusion: all the men of any note endeavouring to create parties for themselves.

The above sketch of the history of Peru has been obtained partly from persons long resident and eye-witnesses of many of the scenes, and the few official documents that have been from time to time published.

To complete the history of the misgovernment of Peru, I will now add short biographical sketches of the chiefs who have been the principal actors in all these troubles and revolutions: these were obtained from individuals who were personally acquainted with most of them.

In the order of events, as they have occurred, Bolivar stands first; his history is, however, too well known to need any detail. He undoubtedly had talents, and was probably at first an honest and conscientious patriot. He split upon the rock that had already wrecked so many before him. His desire of personal aggrandizement caused him to forget that he set out to promote the welfare and happiness of his country. He consequently fell a victim to his disappointed ambition, and for many years previous to his death, accused his

country, which he believed to be indebted to him, of ingratitude, for not preferring his interests to her own happiness. Notwithstanding his many faults, posterity will give him due credit for his meritorious actions. This, however, does not satisfy the South Americans. Their taste and customs lead them to desire present gratification rather than posthumous fame. It is remarkable, that not one of the men that the revolutions in South America have brought forth, appears to have been influenced by the feeling that he was serving his country.

La Mar was, during the early part of the war of the revolution, in the Spanish service; but he afterwards joined the popular side. He served with great credit to himself until the close of it, and contributed much to the success of the last and decisive battle of Ayacucho. After this he retired to Guayaquil, where he had married a lady of good family, and remained quietly in the enjoyment of domestic comfort, until he was called to the presidency of Peru. He was a man of respectable talents, pure and unsuspected integrity, and universally esteemed in private life. He died in Central America, whither he had been banished by Gamarra, leaving a reputation much fairer than that of any of his associates.

Gamarra also had served for several years in the Spanish army, before the revolution broke out. He early joined the patriot side. As a subaltern, he acquired the reputation of being an active and zealous officer; but on his promotion to higher grades, he is said to have displayed, in the battles and skirmishes in which he was engaged, but little military skill, and his courage was more than once questioned. At the close of the war, he was raised to the rank of general of division; and his first act, as has been seen, was to desert La Mar at Portete, which manifested both his treachery and cowardice. His success has been ascribed to his skill in intrigue, and to his making use of the patronage of his station to effect his purposes. He trampled upon the rights of those over whom he ruled, while at the same time he was making the strongest professions in favour of democratic principles, and the rights of the people. Under the pretext of restoring to his country its violated constitution, he has twice overthrown the established authorities, and placed himself in power at the point of the bayonet. Lavish of the public treasure, and equally careless in the economy of his private affairs, he lived and died in poverty. False in his friendships, and unforgiving in his enmities, he was especially to be feared by those with whom he became apparently reconciled after a quarrel. He has left but few admirers, although through his management he contrived to hold the reins of

government longer than any one who has yet occupied the presidential chair.

Lafuente was a cadet in the Spanish service, but joined the patriot cause. He did not gain much reputation in the war of the revolution, and his first essay as a general officer was a disobedience of orders in landing at Callao, while on his way to join La Mar, at the same time uniting in intrigues with Gamarra, whom he succeeded in getting nominated as President, and himself as Vice-President. These two chiefs appear to have understood each other, and, to avoid collision in the division of the spoils, agreed that each should pursue his leading passion. Gamarra accordingly conferred honours and rewards, whilst Lafuente indulged his mercenary propensity in the accumulation of wealth. The latter has grown rich, by robbing the people and by farming out the resources of the state to his agents and friends. Although certainly not the only chief magistrate who has plundered the state, he is, perhaps, the only one in Peru who has hoarded his ill-gotten wealth, and obtained affluence whilst his country was impoverished. He is still living, and was acting as chief during our visit to Lima.

Orbejoso served in the patriot army during the revolution, and at the close of the war retired to his estate near Truxillo, with but little reputation. There he remained until elected to the presidency, in 1831. Without talents as a statesman or courage as a soldier, he acquired more popularity than any other of his contemporaries in Peru. He undoubtedly sold his country to Santa Cruz, receiving as the price of it the appointment of President of North Peru, or rather that of one of Santa Cruz's lieutenants. At the moment of a threatened invasion from Chili, he renounced the Confederation, in order to acquire independent command, and regained much of his lost popularity by a show of patriotism and gallantry in opposing the invading force. His imbecility and want of knowledge, together with the conduct of General Nieto, lost him the battle under the walls of Lima, as well as the possession of the city, and all his troops. Soon afterwards, he was found in retirement at Guayaquil, where he has been constantly occupied in forming plans for his reinstatement to power.

Salaverry served as a cadet in the last year of the revolution, and was esteemed an enterprising and gallant officer. He was, however, of a reckless disposition, and it is related that he threatened to shoot his mother, who had opposed one of his youthful freaks. Others, however, bear testimony to his good conduct in all his domestic relations, and to his kindness and generosity. When he usurped the supreme

authority, he had only about two hundred men at his command, yet in less than three months the whole country had recognised his authority and government. In his short public career he certainly displayed violent passions, and he evinced cruelty in many of his acts; but he seems at times to have had impulses of generosity, though they may have been but feeble. When he assumed the command, and declared himself Supreme Chief, he banished General Nieto, a superior officer. The captain of the vessel in which he went was induced to land him in the north of Peru, where he collected some troops, and made war upon Salaverry, who immediately marched against him, vowing vengeance for what he termed his ungrateful conduct, in return for his lenity. On Salaverry's approach, one of Nieto's followers betrayed him, and he was surprised and captured. Salaverry immediately invited him to his tent; they supped and slept together on the same hide, but he afterwards banished him from Peru.

Another act, which does not show him in quite so amiable a light, was his ordering General Valle Reistra, an old companion, an estimable and good officer, to be torn from his wife at midnight, and within her hearing shot in cold blood, for no alleged crime, but it is supposed merely for the purpose of striking terror into his opponents. Salaverry was full of energy, both to determine and execute his plans, and evinced talents which, had they been controlled by judgment and guided by moral principle, might have consolidated his power and saved his country from the anarchy which has since existed. He possessed the true spirit to rule the Peruvians, so far as energy was concerned; and before Peru becomes settled, she will need some military despotism, in order to break down the small and numerous contending chiefs, who prove, as each gains the ascendency, the worst of tyrants. The mode of his death has already been spoken of.

Santa Cruz was in the Spanish service at the commencement of the revolution, and being captured by the patriots, was for some time a prisoner in Buenos Ayres. On his liberation he espoused the popular cause, and was for a short time at the head of the government in Peru, where he had been placed by Bolivar, and continued until the setting aside of that chieftain's authority, and the election of La Mar as President. Santa Cruz was expelled by the intrigues of his enemies, but was afterwards employed as minister to Chili. His subsequent elevation to the presidency of Bolivia has led to the suspicion that he participated in the assassination of the former President, Blanco; and his patronage of the known actors in that affair, gave strong grounds for believing the truth of the report.

Santa Cruz is a man of ordinary talents, but of sound common sense. From his education (which is superior to that of his countrymen) he is far in advance of them in his knowledge and appreciation of the institutions of other countries. He is indefatigable in his labours, and always exacts the attention of others to their duties. His passions are strong and his temper unforgiving. Mercenary in his disposition, and economical in his habits, he has always been lavish of the public treasure to promote his own views. From his liberal cast of mind, he generally manifested a strong desire to forward the introduction of improvements, and to adopt such measures as would tend to improve the state and its people. His measures undertaken for this purpose, were sometimes arbitrary, and by them, and his desire to engross all the power in his own person, he lost much popularity. Foreigners esteemed him as one of the most efficient chief magistrates that have ever presided over this unfortunate country.

For the purpose of elucidating the character of the proceedings of the chiefs in this country, I will conclude by giving a translation of one of the decrees, establishing the government of South Peru, by Santa Cruz.

Considerando.

1. That the government of South Peru remains incomplete by the death and absence of some of the persons composing it.

2. That the necessity exists, that that government should have an organization more simple than it has yet enjoyed.

It is decreed.

Article 1. That the government of South Peru be composed of a Provisionary President, and a Secretary-General, who shall transact all the ordinary affairs of the Interior and Hacienda, agreeably to the laws, orders, and existing decrees.

Article 2. The Provisional President will place his rubric to all the resolutions and official papers, and sign, with the Secretary-General, the decrees which he may issue.

Article 3. The Provisional President and Secretary are responsible for all the acts of his administration.

Article 4. There shall be two Secretaries, one for the Interior, the other for the Hacienda, with the necessary subordinates.

Article 5. The Provisional President will fill all the vacant places, and displace any from bad conduct, or the neglectful performance of his duties, or transfer them to other posts, as he may deem best for the public benefit.

Article 6. He may lay duties, if they should be necessary for the wants of the service or state.

Article 7. He will have all the executive power which may be necessary for the security, order, and regulation of the state, in every thing that is not reserved by this present decree; notwithstanding, he cannot take the proper rights belonging to the executive power, neither give orders nor resolutions contrary to the existing legislation, nor to the decrees which may be in full force, but to facilitate, make clear, and do away with the difficulties which may impede their execution, and that they may be able to execute the intended reforms and mandates.

Article 8. The Provisional President of South Peru will receive the honours and treatment which are due to a chief having executive power, and the Secretary-General those corresponding to a minister of the cabinet.

My Secretary-General is charged with the execution of the present decree, who will have it printed and circulated.

Given in the Protectoral Palace of Puno, 17th September, 1837.

(Signed) Andres Santa Cruz.

The Secretary-General,
M. De la Cruz Mendez.

Another decree followed this, of the same date, appointing General Herrera the Provisional President, and Colonel Don Juan Jose Lavrea Secretary-General.

The results of my inquiries into the commerce and trade of Peru, are by no means satisfactory. The vacillating policy pursued towards the trade has been most extraordinary; and some of those engaged in commercial pursuits have frequently been enabled, through the necessities of the government, to reap many advantages. Much illicit trade was carried on, even before the revolution, under the Spanish rule. The restriction laid by its authority on commerce, kept the prices of imports high, whilst the low value of exports, left to the arbitrary demand of monopolists, prevented or diminished the means of these countries to pay for what they wanted from abroad.

From this state of things resulted the limited trade and enormous profits to a few individuals, under the colonial system. As soon as the ports were opened, an expansion took place, and the trade was entirely overdone. The markets became glutted with all kinds of foreign fabrics, and many ruinous voyages were made from ignorance of the wants of the people, and their means of payment.

For the last ten years the trade has been better understood. The

demand and the means of payment have been more accurately ascertained, and a healthy and increasing commerce has been carried on, as far as the state of the country and the fluctuations, which are inseparable from a distant traffic, would permit. The commerce of Peru will not bear a comparison with that of Chili, and while the former has been diminishing, the latter has been rapidly increasing. A portion of the supplies which were formerly sent to Peru direct, are now obtained in Chili, and sent to their destination in coasting vessels. This change has been brought about by the unwise policy pursued by the various Peruvian rulers, in imposing heavy transit duties. This is also in part to be attributed to the advantageous situation of Valparaiso, where purchasers are always to be found for articles for the leeward coast. There is little doubt in the minds of those who are most competent to judge, that Valparaiso must become the principal mart of foreign commerce on the west coast of America.

The foreign trade of Peru is principally carried on by the English, Americans, and French. Of late years, a good many German and Spanish vessels also have been sent thither; and occasionally some of the Mediterranean flags are seen on the coast.

The annual imports into Peru are combined so much with those of Chili, that it was deemed proper to include them under the one head; those of Peru amount to about two-fifths of the whole. Of these imports, part go to Guayaquil; the Intermedios, or South Peru and Bolivia, take about one million from Chili and Lima. The returns made from Peru are as follows:

In dollars and bullion, ...	$4,500,000
Bark, hides, wool, cotton, &c., . . .	500,000
	$5,000,000

It will be perceived, that both in Peru and Chili, the imports and exports are nearly the same in amount; and the question naturally arises, whence the profits on the trade? It is readily answered that, as has been already said, large quantities of goods are annually sold in Chili and Peru for Central America, the proceeds of which are shipped thence direct to Europe and the United States, and do not appear in the above note of exports.

These countries offer a large market for our domestic cottons; and if the prices can be maintained, the United States will supply the most of the coarser kinds used there. I have it from the best authority, that the consumption of these goods is now double what it was five years ago, and it is still increasing.

The article of flour, however, has greatly fallen off: previous to 1830, there were nearly thirty thousand barrels exported to Peru from the United States; in the last three years, only six thousand; and in 1841, but one thousand; in consequence of Peru being abundantly supplied from Chili.

FOUNTAIN AT LIMA.

CHAPTER XV.

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LOW
ARCHIPELAGO
OR
PAUMOTU GROUP
BY THE
U.S. Ex. Ex.
1839.
Vincennes
Peacock
Porpoise
145
110
135
145.00 Long. W. of Greenwich
Meetia
TAHITI
Manuhi or Wilsons I
Ahii or Peacock I
Oura
Tikei or Romanzoff I.
Aratica or Carlshoff I.
Takuroa or Wolconsky
Ahunuitem or Arackchieff I
Akahaina or Predpriatelga I.
Raivia or Barclay I.
Tasnga I.
Makemu I.
Tekiro or Risori I.
Good Hope I.
Marutea or Ferneaux I
Tekareka or Doubtful I
Taweree or Resolution I
Pukapuka or Clerke I
Amanu or Moller I.
Dawhdada
Manaka
Two Groupes
Hao or Bow I.
Nengonengo or Lostang I.
Harvey or Gloucester I
Vanuvanoff or Cumberland I
Fangatau or Bram or Martin I
Akiaki or Q Charlotte I
Tematu (aiwuwan or Whitsunday I
Nukutawake or Toav or Lagoon I
Clermont de Tonnere I
Herietua or Archangel
Teku or Four Crowns
Nukutipipi or Marquerets I
Teku or Narrow I.
Purele or Carysfort I
Matilda I
Cockburn I
Marutea or Lord Hoods I
Motutunga or Adventure I
Herakis or Croker I
Tekokota or Melville I
Rekueru or Bird I
Reitone or Buyers I
Anaa or Chain I
Fakarava or Wittgenstein I
Kauehi or Saken I
Raraka I.
Kauwaka or Vincennes I.
Taiaro or Rhins I.
Aratika or Carlshoff I.
Kaukura I
Apataki I.
Arutua or Rieveck I
Manuhangi or Lazareff I
Tikehau or Krusenstern I.
Nairai or Bears I
Tikei or King George Group
Disappointment I.
Henuake or Menden I
Ahunuitem or Arackchieff I
Akahaina or Predpriatelga I.
Pukapuka or Clerke I
Nukutawake or Toav or Lagoon I
Clermont de Tonnere I
Marutea or Lord Hoods I
Matilda I
Cockburn I
Tekokota or Melville I
Tekareka or Doubtful I
Taweree or Resolution I
Marutea or Ferneaux

CHAPTER XV.

PAUMOTU GROUP.

1839.

On the 13th July we had finished the necessary outfits and taken in our stores. The remainder of the latter were embarked in the store-ship Relief, which was ordered to land a part of them at the Sandwich Islands, and the rest at Sydney, New South Wales, after which to proceed to the United States by the way of Cape Horn.

We took leave of our kind friends, Edwin Bartlett, Esq., United States Charge d'Affaires, and Edward M'Call, Esq., United States Consul. To both of these gentlemen I am under many obligations for their kindness, and information in relation to the country and its affairs. Their long residence had made them familiar with those subjects; and many of the transactions they communicated had happened under their own eyes.

At 5 P. M., having a light breeze, the signal was made to get under way, and we were soon standing out of the bay under all canvass. Captain M'Keever accompanied us until we reached the point of San Lorenzo. On his taking leave, we expressed our thanks for the important aid he had rendered us, by giving him several hearty cheers.

The day after our departure, we fell in with a Peruvian brig, from San Blas, in want of water, which we supplied. She had fallen to leeward of her port, and her people were reduced to much distress for want of that necessary article.

I had felt much anxiety lest the small-pox should make its appearance among us, and looked forward daily with apprehension to the hour when the sick reports were made. On the 14th my worst fears were realized, for the Peacock made signal that they had a case of that disease on board. It fortunately proved of a mild type, and no

other symptoms occurred that left any doubt of the entire extinction of the contagion. I was, therefore, greatly relieved, as day after day elapsed, to be assured that we had not only escaped so dreadful a scourge ourselves, but that there was no danger of its being communicated to the islanders.

Being now about to enter upon a new field of observation, in which we should necessarily come much in contact with the natives, I issued the following General Order, to guard against any misdemeanours, and insure a correct deportment in both officers and men, during our intercourse with the islanders.

GENERAL ORDER.

The undersigned, commanding the Exploring Expedition, informs the officers and crews under his command, that as they are now about to visit the Islands of the Pacific, and to have intercourse with their inhabitants, he wishes to inculcate on all in the squadron, that courtesy and kindness towards the natives, which are well understood and felt by all classes of mankind; and trusts that neither contempt of, nor interference with, their customs, habits, manners, and prejudices, nor arrogance over them will be shown by any one belonging to the squadron; bearing always in mind, that savage nations have but vague ideas of the rights of property, and that theft committed by them has been the great cause of collision between them and civilized nations.

He would therefore enjoin upon all great moderation in every thing respecting their intercourse with them, that no act of hostility will be committed, and that an appeal will be made rather to their good-will than to their fears.

That the manner of trading with them which will be established in the squadron, will be most strictly adhered to by all, and that in the event of difficulties or collision, all acts of force will be avoided, unless for self-protection; in short, our aim shall be peace, good-will, and proper decorum to every class, bearing constantly in mind, that the future intercourse of our countrymen with the natives of the islands we may visit, will very much depend on the impression made on their minds by us, and recollecting, that it is in the nature of the savage long to remember benefits, and never to forget injuries.

It therefore behooves us, wherever we go, to leave behind us, whether among civilized or savage nations, favourable impressions, not only as respects this national Expedition, but of our flag and countrymen. The Commander-in-chief feels a confidence in relying on the officers and crews to carry out these views, from their good and exemplary

conduct heretofore, and trusts that he will not have to regret the confidence he reposes in them.

Any acts inconsistent with these views, will meet with the most exemplary punishment.

(Signed) CHARLES WILKES,
Commanding Exploring Expedition.

July 13th, 1839.
United States Ship Vincennes.

I had determined, on leaving Callao, to take up the examination of the Paumotu Group, recommended to the Expedition by that distinguished navigator and promoter of science, Admiral Krusenstern, whose notes were made a part of my instructions, and have been already referred to in Appendix V. I therefore steered for the island of Minerva, or Clermont de Tonnerre, one of the most eastern of the Paumotu Group, or Cloud of Islands, as the name implies. I deemed this to be the most interesting point at which to begin our surveys, and the researches of our naturalists, particularly as it was inhabited, and would thus enable us to trace the inhabitants from one end of Polynesia to the other, across the Pacific. At the same time, it afforded a very desirable point for magnetic observations, and a visit to it would also enable me to settle a dispute between the two distinguished English and French navigators, Captains Beechey and Duperrey, relative to its geographical position. The longitude adopted for Callao, from which our measurements were made, was 79° 11′ 10″ W. This I found to correspond well with that of Valparaiso, the meridian distance between the two being 5° 31′ 50″.

On the 14th we found the current setting to the northwest-by-west three quarters of a mile per hour.

The 15th, at one hundred and twenty miles from the land, we had changed the temperature of the surface to 67°, being a difference of 7°. At three hundred fathoms depth, it was found to be 51°. This day the current was found setting south-half-east, half a mile per hour.

The 16th brought several showers of rain, the first we had experienced since the 8th of June, off Valparaiso. Here we again tried the current, but found none. I now continued the usual experiments on the deep-sea temperature, dips, variation, currents, the visibility of a white object in water, and the dip of the horizon, for which I must refer the reader to the tabular results, only mentioning such as are generally interesting.

On the 18th, the surface water was 70°, and at two hundred and ninety fathoms depth, 50°.

On the 24th, in longitude 99° 39′ W., we found the current setting

southeast half a mile per hour, and directly against the wind. Our latitude was 15° 35′ S.

Until the 29th we had moderate breezes. The current this day was found east-northeast, one-third of a mile per hour. At 9 P. M. the wind came from the west. This evening we had a beautiful display of the zodiacal light. It was very bright; its altitude was 25°; the upper part of the cone was not well marked, and its apex was not defined; the breadth of its base was 30°. A fair breeze from the southwest continued all the next day, when we had reached the longitude of 113° 29′ W., and latitude 17° 36′ S.

On the 31st, we passed over the locality of an island marked on the charts of Arrowsmith. Although we ran over its position with the squadron spread so as to cover an extent of thirty-five miles in latitude, and on its parallel for several degrees, lying-to at night, nothing whatever was seen to indicate land; and we therefore believe that it does not exist.

On the 4th of August, the current was found north one-third of a mile per hour.

Temperature at surface,	75°
50 fathoms below surface,	74
100 " " "	73½
200 " " "	61
300 " " "	50

On the 5th, the current was two-thirds of a mile per hour, to the north-northeast.

The winds on the parallel of 18° S., cannot well be termed "the Trades," for at this time of the year they will be found very variable, though prevailing generally from the eastern quarter, with a long swell from the southwest. The upper stratum of clouds were generally seen flying from the southwest. The deep-sea temperature on the 6th, at three hundred and fifty fathoms depth, was 46°, surface 77°.

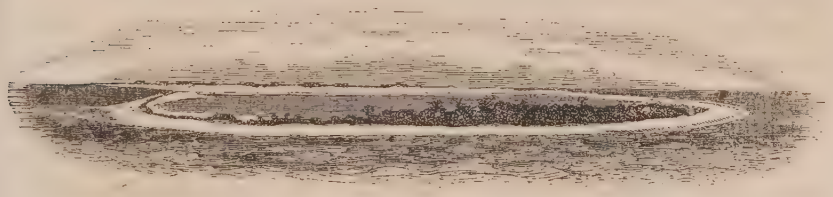
The 7th proved a calm and fine day, throughout which experiments were made hourly to ascertain the depth at which a white object could be seen; the altitude of the sun was taken at each observation, and also the force and direction of the current. The temperature of the water at one hundred fathoms was 75°, whilst that of the surface was 77°. We were in longitude 125° W., latitude 18° 14′ S.

The nights of the 8th, 9th, 10th, and 11th, the meteoric showers were looked for, the officers and naturalists keeping watch, each quarter of the heavens being under vision at the same time. On the 8th, upwards of one hundred shooting stars were seen; but the nights

of the 9th, 10th, and 11th, were cloudy. On the former we had much lightning, thunder, and rain, with squalls from the southwest.

On the 12th, Corporal Alexander Ogle, of the marines, died of inflammation of the brain. He was a valuable man, and had been promoted for his good conduct. He possessed the confidence of his officers, and the esteem of his corps. In the afternoon all hands were called to bury the dead, and his body was committed to the deep, the usual ceremonies being performed by the chaplain, and the vessels of the squadron having their colours at half-mast.

On the 13th of August, at five o'clock, P. M., we made Clermont de Tonnerre, or Minerva Island, and by careful observations the next day, found its southeast point to be in longitude 136° 21′ 12″ W., latitude 18° 32′ 49″ S. Clermont de Tonnerre, being the first low coral island we had met, naturally excited a great deal of interest. We had pictured them to ourselves as being a kind of fairy-land, and therefore looked for them with some anxiety. At first sight the island appeared much like a fleet of vessels at anchor, nothing but the trees being seen in the distance, and as the ship rises and sinks with the swell of the ocean, these are alternately seen and lost sight of. On a nearer approach, the whole white beach was distinctly seen, constituting a narrow belt of land, of a light clay colour, rising up out of the deep ocean, the surf breaking on its coral reefs, surrounding a lagoon of a



beautiful blue tint, and perfectly smooth. This island was twelve feet above the level of the sea, and six hundred feet wide to its lagoon, and is composed of coral debris and vegetable matter. The shrubs are few, and not more than from twelve to fifteen feet high; the Cocoa-nut palms and Pandanus, showing conspicuously above them. We found it, by our survey, to be ten miles long, by one and a half wide, lying in a west-northwest and east-southeast direction. The first sounding, on the east side of the island, at three hundred feet from the reef, was obtained in ninety fathoms (coral sand); at one hundred and eighty feet, eighty-five fathoms (coral sand); at one hundred and

thirty feet, seven fathoms (hard coral), being at the edge of a nearly perpendicular shelf; thence to the shore, the bottom was uneven, decreasing to four, three, and two fathoms, until a second or upper coral shelf rose, over which the water at high tide flowed. This extended to where the beach is composed of broken coral and shells, and arose on a gentle declivity to ten feet high.

The Peacock sounded within three quarters of a mile from the southern point of the island: at three hundred and fifty fathoms, the lead brought up for a moment, and then again descended to six hundred fathoms without reaching bottom. When it was hauled up, it had a small piece of white and another of *red* coral attached to it. The west side of the island is a bare reef, over which the surf breaks violently. There is no opening or entrance to the lagoon.

For the purpose of surveying the island, the Peacock and Flying-Fish took the west side, while the Vincennes and Porpoise kept on the east. Boats were lowered and sent on shore for the purpose of landing; several of the officers and naturalists succeeded in reaching the beach, (swimming through the surf,) where they remained about two hours making collections.

I saw some natives, five men and two women, and endeavoured to hold communication with them. The former were armed with long spears. They were cautiously watching our movements; and after the boats had left, they were seen examining the beach for articles that might have been dropped. Every inducement was held out to them to approach my boat, but without success; and we were obliged to return on board for the night, not having succeeded in finishing the survey. Wishing to communicate with the natives, and effect a landing, we lay-to, and by morning found that we had drifted off from the island eight miles to the northwest, and did not again reach our station until towards the afternoon. I then proceeded to the beach, taking with me as interpreter, John Sac, a New Zealander, who spoke the Tahitian language, determined, if possible, to enter into communication with the natives, and to land to make observations. Seventeen natives were now seen on the beach, armed with long spears and clubs, which they were brandishing with menacing attitudes, making motions for me to retire. As I approached them with a white flag flying, many more were seen in the bushes, probably in all about one hundred. I told John Sac to speak to them, which he did, and found he was understood. The only answer he could get from them was, several of them crying out at the same time, "Go to your own land; this belongs to us, and we do not want to have any thing to do with you." It was impossible to beach the boat without

injury, on account of the surf and coral; and in order to land, it was necessary to swim a short distance, which could not be done without our being attacked, and suffering injury, before we had established a friendly intercourse. I therefore had recourse to throwing presents to them,—all of which they eagerly took,—assuring them that we were friends; but they still continued warning us off, and threatening us with their long spears. I am rather inclined now to think our interpreter was partly the cause of my not succeeding in overcoming their fears and scruples. John Sac was truly a savage, although he had imbibed some feelings of discipline, and was generally a well-disposed fellow. He was a petty New Zealand chief at the Bay of Islands, and had resided some time at Tahiti, where he said he was married. At times it was difficult to control John's movements. On this occasion he soon became provoked at the chief's obstinacy; and the idea of their receiving all our presents so greedily without even thanks in return, excited his native fire; his eyes shone fiercely, and his whole frame seemed agitated. Half naked as he was, his tattooing conspicuous, he stood in the bow of the boat brandishing his boat-hook like a spear with the dexterity of a savage. It was difficult to recognise the sailor in the fierce majestic-looking warrior before us. The chief and John kept passing words until both were becoming vociferous, the one appearing as savage as the other. John's animated attitudes and gestures were the admiration of all. As we could not understand him, he may have said many things to irritate the savage chief before he could be silenced, although he afterwards declared his innocence in that respect. I had been engaged for upwards of an hour endeavouring to overcome their fears, when I was joined by several boats from the other vessels. The officers being anxious to have communication with the natives, were desirous of landing, and I readily gave them permission to do so without arms. They passed a short distance from us, hoping to effect their purpose without opposition, but the natives separated, in order to oppose any landing. One or two officers swam through the surf without arms, and were boldly set upon by three of the natives, when they made a hurried retreat. This evidently gave the natives confidence, and their conduct became more violent. Mr. Couthouy requested permission to land with presents, under the protection of the boat, to which I consented. He swam on shore, pausing now and then, for the purpose of showing the trinkets. The chief motioned him away, but he landed on the rocks. The chief, retiring, appeared as if somewhat alarmed, while Mr. Couthouy advanced towards him, holding out the presents. On being joined by another native, the chief stopped, raised his spear,

and with a shout and distortion of countenance, made a pass at Mr. Couthouy, who at once dropped looking-glasses, trinkets, &c., at his feet, and quickly made for the boat. The savage took no notice of the relinquished offerings, but advanced to attack him with his spear. When he had reached the edge of the surf, the chief made another thrust at him, but fortunately without injury. This precipitate retreat gave them still more confidence; they now began throwing pieces of coral, numbers of which struck the men in my boat. I felt no disposition to do them harm, and yet I had no idea of letting them see and feel that they had driven us off without landing, well knowing, however, if a forcible landing took place, and they made resistance, that injury would befall one side, and probably both. I, therefore, thinking that they had no idea of fire-arms, ordered several blank cartridges to be fired; but they took no notice of them.* According to John Sac, they hooted at these arms, calling us cowards, and daring us to come on shore. I then fired a small charge of mustard-seed shot at their legs, which did not produce any effect. Then, Mr. Peale, who was near by me, was requested to draw his ball, and load with mustard-seed, which he did; and Lieutenant North likewise fired, which caused the chief and all the rest to retreat, rubbing their legs. The officers were now permitted to land, under strict injunctions, in order to avoid all contact with the natives, not to leave the beach. So much time had been lost before I could get the instruments safely on shore, that I found it too late to make the observations I desired.

The natives whom we saw, appeared a fine athletic race, much above the ordinary size. Their colour was darker than that of our Indians, but their features resembled them. No tattooing was observed on the men, and the women were not seen close enough to distinguish them. The hair of the former was long, black, and straight. The chiefs had theirs drawn back, and tied in a knot behind; the others had theirs hanging loose. They wore a small maro made of leaves, and the chiefs a pandanus-leaf around their necks, probably to distinguish their rank. The women wore a piece of tapa as a petticoat; they were not oiled, and the heads of some seemed filled with ashes or lime. They spoke and understood the Tahitian dialect. The only information obtained from them was, that vessels had before been there, but had gone away without landing.

Immediately on their being driven from the beach, a large column of smoke was seen, no doubt a signal to the other inhabitants of the

* I have since understood, however, that the poor natives have been fired upon by trading vessels engaged in the pearl-fishery, in mere wantonness, which will account for their hostile reception of us.

island. After being on the reef half an hour, we joined our boats, and returned on board near sunset. One canoe was reported, the next morning, as having been seen from the Peacock.

The number of inhabitants that we saw certainly did not exceed one hundred and twenty.

The common house-fly was found in great numbers at this island. A number of fish were caught; some shells, and specimens of most of the plants, were also procured.

After lying-to for the night, we, at daylight on the 16th, bore away for Serle Island, having first ascertained our distance from the point of Clermont de Tonnerre by triangulation. We then ran by the patent log for Serle Island direct, by which means we made the distance between the two islands, twenty-six miles and two-tenths. No signs of any other island exist between these two. This will, I think, settle the question between Duperrey and Beechey. The latter is undoubtedly wrong as respects the longitude of Clermont de Tonnerre, which he places some twenty minutes too far to the eastward, and I doubt not some accidental error has occurred in his observations; for I find, at Serle Island, Duperrey, Beechey, and myself, agree within a few minutes.

Serle is a low coral island, and has a large and very regular clump of trees on its western end, which at a distance might be taken for a mound or hill. Its length is seven miles, and its width one and a fourth. It lies in a northwest and southeast direction. There are but few inhabitants on it. The position of its southeast end is in latitude 18° 21′ 10″ S., longitude 137° 04′ 10″ W.

The vessels again separated for its survey ;* boats were sent to trace the reef, and have communication with the natives, if possible. Before night we had completed our survey, and the boats returned. Lieutenant Alden, in charge of one of them, reported that he had had communication with the natives, who were very friendly and desirous of holding intercourse with him. He obtained several articles of curiosity from them. Some of them were tattooed. They were found to be arrant thieves, wishing to carry off every thing they saw, trying even to pull the copper off the blades of the oars,—and all this apparently without any idea that it was wrong. When first seen they were armed with spears, but observing that we did not attempt to land, they sent them away in charge of a boy, and swam off to the boat.

I now determined to wait until the next day, for the purpose of having further communication with them, and ordered every thing to

* For the mode of making the surveys of the Coral Islands, see Appendix XLI.

be prepared for an early landing; but during the night, the officer of the deck of the Porpoise (Acting Master Sinclair) ran into the Vincennes, and did both vessels some injury, smashing the starboard quarter boat, which broke adrift, cutting off our backstays, and losing some of the head-spars of the Porpoise. By this accident we lost our position, and in the morning found ourselves so far to the leeward, that I knew it must occupy much time—which we could not afford to lose—before we could regain the island. I therefore reluctantly bore away to the northward, to pass over the localities of one or two doubtful islands, on our way to that of Honden.

On the 19th of August we made Henuake, Honden, or Dog Island, and came up with it about noon. The boats were at once despatched, in order to ascertain if a landing could be effected, and the ships began the surveying operations. The surf was found very heavy on the beach, but the boats notwithstanding succeeded in landing. The number of birds seen hovering over the island was an indication that it was not inhabited, which proved to be the case. Several turtles were caught, and a number of specimens obtained. The survey of the island not having been completed, I lay by all night, and early in the morning despatched boats to complete the examination of it, and to effect a landing. The greatest part of the day was spent on the island. Near the place where we landed, there has been a channel to the small lagoon in the centre of the island, and there is another of a similar character on the opposite side. They were both dry, and the sea-water can only communicate with the lagoon at very high tides. From our observations of the day, the usual neap tide is three and a half feet, and it would give high water at full and change of the moon, at 2 P. M.

SECTION OF CORAL ISLAND.

There are many blocks of compact coral, just at high-water mark, quite black on the outside, but on fracture they showed the white coral. The white coral shelf over which the sea flows at high water was two hundred feet broad, the low water falling two feet below its surface; it is quite level, but there are many holes and large longitudinal cracks in it. On this lies the compact coral above spoken of, extending

beneath the coral sand. It is about ten or twelve feet wide. The coral-sand beach above the compact layer has eight feet perpendicular rise, and lies at an angle of 47°. On the top of this are small pieces of coral, which have been thrown up by the sea, around the roots of trees and shrubs, growing to the height of from fifteen to twenty feet. We found the water in the lagoon quite salt, and very warm. Its bottom for a long distance was filled with a fine deposit of calcareous mud, about six inches in depth. The water had apparently evaporated from the lagoon, and to the taste was much salter than the ocean. Purslane (Portulaca) was found growing in a thrifty state in this deposit. Where the lagoon was deeper, some fine specimens of corals were observed and obtained. No traces of inhabitants were perceived on this island. The state of nature in which the birds were found, and other indications, gave proof that it had not been inhabited, at least for some time. There were a great many sharks, both in the lagoon and outside, which were so ravenous that they bit at the oars. It was by no means pleasant to have to swim through the surf to the boat with these dangerous animals so numerous around us.

The landing on a coral island effectually does away with all pre-conceived notions of its beauty, and any previous ideas formed in its favour are immediately put to flight. That verdure which seemed from a distant view to carpet the whole island, was in reality but a few patches of wiry grass, obstructing the walking, and offering neither fruit nor flowers to view; it grew among the rugged coral debris, with a little sand and vegetable earth.

The principal trees and shrubs are the Pandanus, Boerhaavia, and Pisonia. It is somewhat surprising that a few trees forty or fifty feet high should have found sufficient soil to protect their growth. Most of the trees, however, are of stunted size, being not more than ten to fifteen feet in height, and eighteen inches in diameter.

Van Schouten and Le Maire visited this island, 10th April, 1616, some two hundred years before, and it was even then clothed with vegetation. If their description is an accurate one, the island appears now to be rather higher, as they report "from what they could judge, the greater part of the island is overflowed at high water;" this is certainly not the case now. The centre of the island is in latitude 14° 55′ 40″ S., longitude 138° 47′ 36″ W.

The number of birds on the island was incredible, and they were so tame as to require to be pushed off their nests to get their eggs. The most conspicuous among them was the frigate-bird (Tachypetis aquilus); many of the trees were covered with their nests, constructed of a few sticks. The old birds were seen, as they flew off, inflating

their blood-red pouches to the size of a child's head, and looking as if a large bladder were attached to their necks. The gannets, sooty terns, and the beautiful tropic-bird, were in countless numbers; the former guarding their eggs, (which were laid on the ground without a nest,) with care, remaining by them, and even suffering themselves to be captured without resistance. Their hoarse croaking was quite deafening.

Some droll sights were seen of crabs walking off with snakes, and both again seized by some stout bird and borne away. Armies of soldier or piratical crabs (Paguri) were seen moving in all directions with their shells. We enjoyed ourselves much, and found no use for our guns, powder, and shot; as many specimens as we could desire were taken with the hand, both old and young. In some cases the tropic-birds were taken off their nests, and from others their eggs were taken without disturbing them; indeed, I have never seen any barn-yard fowls half so tame.

The various snakes, the many-coloured fish, the great eels, enormous and voracious sharks, shells, large molluscs, spiders, with the curious lepidoptera, seemed to have quiet possession, their webs stretching in every direction, and occasioning us much annoyance: all gave a novelty to the scene, that highly interested and delighted us. In the afternoon we returned on board, loaded with specimens; and the survey being completed, we bore away on our course.

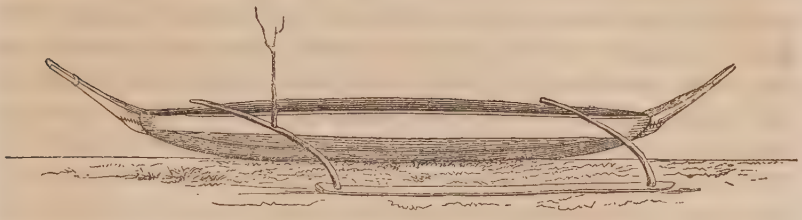
There are no cocoa-nut palms on the island, as has been reported by Captain Fitzroy, in his voyage; nor is there any fresh water to be found. Some of our gentlemen saw on the beach some broken oars and remains of a boat, but nothing could be identified.

Pandanus trees exist on the south side.

On the 23d of August we made the Disappointment Islands of Byron: they are two in number, called Wytoohee and Otooho. On the same day, I was informed by Lieutenant-Commandant Ringgold, of the Porpoise, that George Reynolds, ordinary seaman, had died of chronic pneumonia; the chaplain went on board in the afternoon, and performed the last offices.

On the morning of the 24th we were off the northwest end of the island of Wytoohee, which lies in latitude 14° 09′ 30″ S., longitude 141° 17′ 50″ W. Many canoes came off to the ship: as they approached the vessels, the natives were heard, while at some distance, singing; and, as they drew near, the clamour increased, accompanied with much laughing, and many gesticulations; but none of them could be induced to come on board, and they were not willing to part with any thing but some pieces of old matting. An attempt was made to

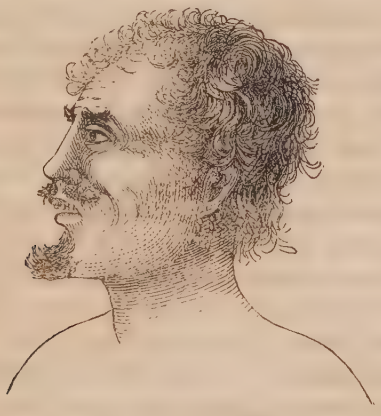
get some of their paddles, but they rather ridiculed the idea of parting with them.



CANOE OF WYTOOHEE.

The canoes were quite small, being only from twelve to fifteen feet long. They generally contained two and sometimes three natives. Each canoe had an out-rigger, and a projecting point, both before and behind, by which they get into them from the water. They are formed of strips of cocoa-nut wood sewed together. Two persons can carry them. Their paddles were curved backwards.

In order to dispel their fears, articles were given them gratuitously, and by way of showing their gratitude, they began a monotonous song or chaunt. They would occasionally stop, look up, and return the laugh of the crew by a grin; apparently enjoying the sport as much as any of them.



NATIVE OF WYTOOHEE.

These natives are peculiar, and appeared totally distinct from any others we met with in this group, having strong wiry beards and mustaches, and a different physiognomy. The portrait by Mr. Drayton, gives a very correct idea of them.

I sent one of the boats to the shore, with the interpreter, under Lieutenant Case, but they refused to allow them to land. No actual

violence was attempted, but Lieutenant Case reported the impracticability of landing without opposition, and injury to themselves and natives. They received several presents, but they had no fruit to give in return, as their cocoa-nuts were tabooed. They gave, in exchange, some articles, consisting of cloth, fish-hooks, adzes, and pearl-shells. Among the articles seen in their possession, was a fine silk pocket-handkerchief, showing that they had had communication not long since with vessels. They refused to part with their spears or clubs. Their adzes were rudely made, but ground very sharp; they were formed of the tridachna or cassis shell, lashed on a handle somewhat resembling our adze-handles. Knives were also observed in their possession.

The remainder of the day was employed in surveying the island, which not being finished by night, we lay-to in order to complete it the next day. On the 25th, the Peacock and Porpoise were ordered on one side of the island, the Vincennes and tender on the other. Boats were lowered to effect a landing if possible, and trace the shores.

Wytoohee is formed of islets connected by a washed coral reef, of irregular shape, with a lagoon having many knolls in it, of various sizes, some four or five feet above the surface. The southeast portion is the largest and most thickly wooded, and contains the greatest number of inhabitants.

After the surveying duties were over, we found ourselves at the northwest point of the island. The natives who had refused to allow us to land, were now seen waving green boughs, which is the general sign of good-will, and a desire to have communication, and many were seen dancing on the beach, with their spears in their hands. I gave orders to send the boats to the shore, but on reaching it we found them still averse to our landing; they, however, assisted Mr. Couthouy through the surf to the beach; but when he had reached it, they surrounded him, and led him back very gently to the water, making him distinctly understand that they would not permit him to visit their huts. They were extremely desirous of obtaining buttons, pieces of iron, and cloth. We gave them several small articles, but they could not be persuaded to part with their spears and clubs. The chief, who was a very old man, was seen lying under a Pandanus tree, close to the beach, and on being told I wished to see him, and make him a present, he arose; his hair was quite gray, and he had a long and stiff white beard; his legs were enlarged with the elephantiasis, the swelling being of a white colour, and so large and regular that many thought he had on sailor's trousers. About twenty natives were with him on the beach. After being shown the presents I had for him, he was induced to wade into the water up to his neck to receive

them. On coming alongside the boat, he seemed somewhat uneasy, until he had gone through the ceremony of rubbing noses, which I must confess was any thing but agreeable with so dirty and diseased a person. He was extremely anxious to get hold of the presents, and amused us by at once plunging them under the water, seeming in no manner concerned about keeping them dry. He was all the while making a noise like the purring of a cat. In return for my presents, he at once offered me the short mantle of matting which he had over his shoulders.

They understood the Tahitian language. The chief gave his name as Korokoa, and the name of the island as Wytoohee. He appeared about sixty years of age, and his teeth were all sound and good.

His brother was the priest, to whom I also gave some presents. This man had a very remarkable head, the forehead being very high, and narrow almost to deformity, with a dark and suspicious bright eye. His hands were deformed, being destitute of joints, and the lower part bent at right angles. The son of the chief was a remarkably fine-looking lad of fifteen. We saw no women, as they had all been hid. The colour of these natives was much darker than those seen before; in some the hair was inclined to frizzle, and the beard curly. All the grown men that I saw had mustaches; their features were strongly marked with a good-humoured expression of countenance; they wore the maro, and some had a few feathers in their hair.

The boats of the Peacock succeeded in landing on the east side of the island, where the coral reef shelves at about an angle of 10°, and having the wind blowing obliquely on it, there is comparatively little surf. Some half a dozen natives were here seen; an officer approached them making signs of friendship, which they returned. At first they seemed quite timid, meeting the advances made in a manner which showed that they were anxious to propitiate us, but still fearful. They were reassured of our good-will by offering them some small presents, when two old men came forward, holding their arms upright above their heads, with their hands open, and became desirous of shaking hands, and even offered to rub noses. Each was armed with a stick, (for it could not be called a spear,) six or seven feet long: on some of them were fastened the jaws of the porpoise.

Tney appeared to be greatly astonished, and their looks bespoke amazement at our appearance. Occasionally, as if to satisfy themselves of the reality, they would put their hands on us. On receiving a few trifling presents, they broke forth into the same song or chaunt that was heard on their first coming towards the ship. The younger ones were the first to show confidence, and were much disposed to laugh and joke

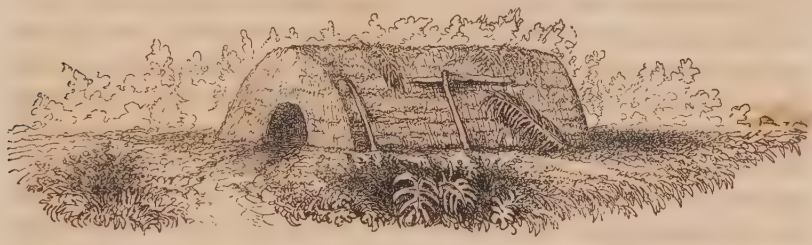
with the men; and some of the officers thought they recognised those who had been in the canoes the day before.

NATIVES OF WYTOOHEE.

On our gentlemen requesting to go to their huts, they seemed to be thrown into a kind of stupid wonderment, but on being assured they had nothing to fear, their countenances brightened up, and they led the way through the wood to an open space, surrounded by pandanus and cocoa-nut trees. These natives had evidently had communication with vessels, but I very much doubt if any had landed before. They did not appear at all alarmed at the firing of guns, but were much surprised to see the birds killed, holding up their hands, and making ejaculations. They had no idea of the principles of barter, and allowed any thing to be taken without opposition, receiving any articles in return with gratitude and delight. Iron was prized more than any other thing. On reaching the huts, inquiry was made of them for their women, when a general burst of laughter ensued, and they gave us to understand, that they had penetrated our motive for visiting their island—"That as we inhabited an island without any women, we wanted to have some." Nothing more was said to them on the subject. They accompanied us to the boats, and at parting went through the same ceremonies of rubbing noses, shaking hands, and raising their arms with the palms towards us. According to the estimate I made of the inhabitants, the number was about ninety. From the great age of the chiefs, and the

absence of wounded or scarred individuals, I should conclude they lived in peace. They, however, gave their neighbours on the small island to the west (which they called Otooho), a very bad name. Water in small quantities is to be had on the eastern section of the island, and a little biche-de-mar might be taken on the reefs. A small rat was very troublesome to the natives. This island has some Cocoa-nut, Bread-fruit, and Pandanus trees; the Pisonia, Tournefortia, and the shrubs that are common to the low islands, also grow upon it.

The huts of the natives scarcely deserve the name; they are merely four or five poles, with both ends stuck in the ground, forming an arch on which strips are tied, and over these the leaves of the cocoa-nut, mats, and grass, are laid. They are about six or eight feet long, four feet high, and about five feet wide, barely sufficient to keep out the sun, and entirely useless as a protection from rain.



NATIVE HUT.

Their utensils are small, and seemed ill adapted to their use. Their baskets were suspended from the tops of their huts and from trees. The natives seemed destitute of tapa. No anchorage was found at this island.

At nightfall the squadron was put under short sail, supposing that the current by the morning would take us to the leeward near Otooho, a distance of ten miles. It lies west-northwest of Wytoohee, distant twelve and one-third miles, and is distinctly seen from it, like a round knoll. This appearance is owing to the trees upon it, for the land is as low as coral islands usually are. We found by the morning, that the current had been about one mile per hour to the west, and therefore much stronger than I anticipated; we were in consequence some distance to leeward of the island. With the light wind, I knew the ship could not reach it before the afternoon. I immediately sent the naturalists on board the tender Flying-Fish, and gave Lieutenant Pinckney orders to endeavour to land them, and to pass around the island and survey it; neither of which he succeeded in doing. The survey was finally completed by the boats of the Vincennes and Peacock. The naturalists tried to effect a landing, but were opposed

by some dozen natives, who were resolute in preventing them from going beyond the water's edge; in other respects, they were disposed to be quite friendly.

The chief was an old man, and was induced to venture off towards the boat. One of the gentleman swam to those on shore; his reception was similar to that met with at the other islands: rubbing noses, kissing, and shaking of hands. Whenever he attempted to lay his hands on them, they started back, but were continually pawing and whining over him, making a kind of purring noise, not unlike that by which we propitiate or soothe the feelings or doubtful temper of some beast. They presented them with mats made of the pandanus-leaf, and also pieces of worn-out tapa, in return for many articles received, but would not suffer our people to put their feet upon dry ground, and when it was attempted, kept shoving them gently into the water.

The naturalists in the afternoon endeavoured to effect a landing at another place, out of sight of the natives, and succeeded. Mr. Brackenridge, on landing the second time, ran to the thicket, in order to lose no time in making collections, and was employed in gathering specimens, when two stout natives came running up, and made him understand, by very intelligible signs, that he must return to the boat; he pretended not to understand them, and endeavoured to proceed, but they went before him, and crossed their clubs, determined that he should go no farther. This caused him to laugh, in which the two natives joined. Finding there was no alternative, he took an oblique direction towards the boat, hoping by this means to enlarge his collection, which he succeeded in doing, while the natives, as he describes it, shouldered him out of the bush, and then towards the boat. The rest of the party having gone up to the huts, were at once seized and shoved down towards the boat, and into the surf, where they presented rather a ludicrous appearance, with the danger of drowning on the one side, and the natives on the other, who had them completely in their power, as they had neither arms nor any other means of defence. No harm, however, was done them, but the alarm incident to being threatened with spears. The only mishap met with was the loss, by one of the gentlemen, of a pair of spectacles, and a bruise or two from the coral, in their hurried retreat. As the surf was heavy, life-preservers were sent to those who could not swim; and after much detention, they reached the boat in safety. Had such a circumstance occurred at Clermont de Tonnerre, I am satisfied that most serious consequences would have resulted to us.

The superficial extent of the island of Otooho is about a square mile; it has no lagoon, is well covered with trees, and has fresh water.

There were nineteen men counted, which would make the population about fifty souls. No women or children were seen.

At all the inhabited islands we found the greatest numbers of the common house-fly: while at Honden Island (uninhabited) none were perceived. No one can estimate the annoyance they cause, until it has been experienced.

The huts of the natives of Otooho are different from those of the neighbouring island, but quite as rude.

About three quarters of an hour after sunset, the naturalists were again on board, and we bore away on our course to Raraka. Having been informed that several islands were supposed to be in this neighbourhood, that were known to the natives, but not laid down on the charts, I determined to lie-to during the night. At daylight we again bore away, spreading the squadron in open order of sailing.

On the 29th, at daylight, land was reported, and we soon ascertained that it was not laid down on the charts. It is low, nearly of a circular form, and well covered with trees and shrubs, and has a lagoon of some extent. Its centre is in latitude 15° 42′ 25″ S., longitude 144° 38′ 45″ W. I named it King's Island, after the man at the masthead who first discovered it. After completing the survey of it, we landed on its lee side, where the water was quite smooth, and spent the afternoon in examining it. There were no natives on it, but every indication that it had been inhabited recently by a party of pearl-fishers. The lagoon appeared to be well supplied with the pearl oyster. We found on the island two small springs of fresh water, near its lagoon, and a good supply of cocoa-nuts. Many specimens of plants were obtained, and several interesting objects of natural history were added to our collections; for an account of these, the reader is referred to the reports of the naturalists.

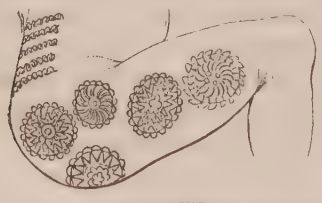
This island had more soil on it than any yet met with, and seemed to be productive. Large quantites of cocoa-nuts were lying about in heaps, no doubt gathered by those who had visited it before us.

The magnetic observations were also made here. The width of the island to the lagoon was found to be twelve hundred feet. A very narrow reef surrounded it, and the whole island was but six feet above the sea reef. No coral blocks were seen. It lies twenty miles to the northeast of Raraka. There is no opening to the lagoon, and the island is thickly wooded all round. An old canoe was found, very much decayed and broken, and the remains of a hut on the beach.

In the morning we bore away for Raraka, and shortly afterwards made it. As we approached it, another island was discovered, to the northward and westward, which was not laid down on any charts.

On Raraka we soon discovered a party of natives, near the entrance to the lagoon, waving a Tahitian flag, three horizontal stripes, red, white, and red. They were partly dressed, some in shirts, without hats, others with vests, and others again with trousers of all colours. I joined the schooner, stood in for the mouth of the lagoon, and landed.

Nothing could be more striking than the difference that prevailed between these natives and those of the Disappointment Islands, which we had just left. The half-civilization of the natives of Raraka was very marked, and it appeared as though we had issued out of darkness into light. They showed a modest disposition, and gave us a hearty welcome. We were not long at a loss as to what to ascribe it; the missionary had been at work here, and his exertions had been based upon a firm foundation; the savage had been changed to a reasonable creature. Among the inhabitants was a native missionary, who had been instrumental in this work. If the missionaries had effected nothing else, they would deserve the thanks of all those who roam over this wide expanse of ocean, and incur its many unknown and hidden dangers. Here all shipwrecked mariners would be sure of kind treatment, and a share of the few comforts these people possess. No savage mistrust and fear were seen here. The women and children came about us, receiving our trifles. They showed much joy and curiosity at the sight of us, and were eager to supply our wants. The chief was an old man, much tattooed about the breast and arms, which gave him the appearance of a blue and brown checker-board; others had large rosettes on their legs, and horizontal bands on the back, passing a considerable distance on each side of the spine, elaborately executed in various patterns.



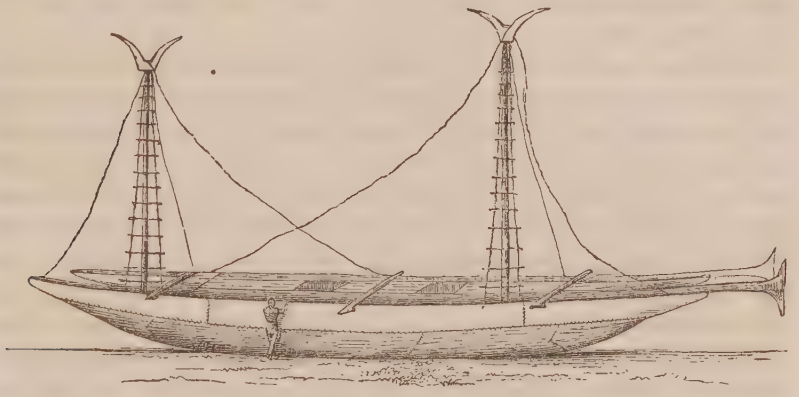
TATTOOING.

This is believed to be the tattooing peculiar to the inhabitants of Anaa or Chain Island. They frequent the different islands of the group, and are generally employed by those engaged in the shell-fishery.

I was particularly struck with the modest and quiet behaviour of the native missionary, who was a Tahitian. He kept himself aloof, whilst all the others were crowding round to partake in the presents we were distributing, and seemed much gratified and astonished when I selected him out as the recipient of a present similar to the one I had given the chief.

All the males' heads were shaven, somewhat after the fashion of a Dominican friar. This practice is said to have been adopted by the missionaries at Tahiti, for the sake of cleanliness, and also to dis-

tinguish the Christian from the heathen party. The women have theirs cut close, and some are clothed in a pareu, consisting of three or four yards of cotton, others in a loose gown. They were any thing but good-looking; but the men were tall and well made. The variety of apparel was droll enough. As for the children, I have seldom seen finer; all were well formed, and as cheerful as they could be. They were for the most part naked. About two hundred inhabitants were counted on the island, most of whom belonged to Tahiti and Anaa, or Chain Island, and were here on a shelling voyage. They had arrived in two double canoes, such as are used in navigating from island to island; they were now drawn up on the beach. These vessels were apparently well taken care of, and in this situation we had a good opportunity of examining them. The annexed is a faithful representation of a double canoe.



DOUBLE CANOE OF THE PAUMOTU GROUP.

They are thirty-five feet long and four and a half feet wide, connected together by a strong framework, on which is placed a deck, and a temporary hut is erected on their voyages. Every part is neatly put together, and well secured with twine and sennit made of cocoa-nut fibres; no iron or metal of any kind is used in their construction; they have two masts, supported by vines in place of ropes, and are enabled to spread large mat sails; they steer with a large oar. After examining them, one can easily account for the long voyages which the natives have been sometimes able to accomplish. They find no difficulty in navigating them, and are now learning the use of the compass, but I am informed they still prefer sailing by the stars and sun, and seldom make any material error. Navigating as they do from island to island, they have not unfrequently been overtaken by storms, and some have been lost, while others have taken refuge or

been wrecked upon other islands, and have been absent from their own several years. These gales they say come from the northwest They live here in small huts, which are rather an improvement upon those of the islanders we had already seen; these dwellings are formed of poles, with a mat covering, and are carried with them on their voyages.

Though scarcely able to protect them from the weather, yet these huts are clean, and lined with mats. Their persons seemed cleanly also, and they showed a great disposition to oblige us. Some attention was paid to cultivation, as was evinced in the plantation and care of their cocoa-nut groves, as if wishing to provide for their future wants. The trees of the young plantations were all carefully staked around. Their food consists of dried fish, somewhat similar to a whiting, of which they had a good and plentiful supply, and also of the masi, a preparation of the bread-fruit, which they were keeping for their return voyage.

This was the first island on which we observed the dawning of Christianity and civilization. The native missionaries, although they are yet ignorant of most of the duties enjoined upon a Christian, still do much good in preparing the way. Many learn to read, and some even to write, under their tuition; yet they have many impediments thrown in the way of their efforts by the introduction of spirits by the whites. The old chief, and others, are much addicted to the use of it, and the vessels resorting here for the pearl-fishery generally employ native divers, and pay them for the most part in rum or whiskey. We found here an Englishman who had belonged to a schooner engaged in the pearl-fishery. He told me he had been left there sick by his captain, and had been kindly treated during his stay of three months on the island. I was in hopes of obtaining some information from him, but he knew little or nothing of the language, and was, moreover, a stupid fellow. I gave him a passage to Tahiti, whither he was desirous of going, in the tender.

Having some business on board, I invited the chief to go off with me: he first inquired if all the boats and men were to stay; on my telling him they were not, he said he would go on board if I would also take his wife, and her brother; to which I consented.

The chief had lost one hand, which he informed me had been bitten off by a shark whilst employed in diving for shells. We became great friends, and he thought it necessary to be at my side the whole time. He was an odd old man, and proved before we left him that he had become acquainted with some of the vices of civilization.

We all embarked, soon reached the tender, and bore away for the

ship, some three or four miles distant. The old one-handed chief now came up to me in a very mysterious manner, and untying a knot in the tail of his shirt (which was the only garment he wore besides his maro,) with no small difficulty, with one hand and his teeth, drew from it a small dirty piece of linen, tied up as a bag; this he produced with great form, and evidently expected to astonish me. The contents proved to be a few small discoloured pearls; these he begged me to accept, but I declined to receive them. We now reached the ship, and I ordered every thing to be shown them. Their surprise was very great. While on board, Messrs. Drayton and Agate succeeded in getting a most accurate portrait of him.

PORTRAIT OF THE ONE-HANDED CHIEF.

The natives were much amused with the ship, and surprised at the number of men on board. Many small presents were given them. When they were about taking their departure, the old chief complained of being quite sick, and his whole air and manner showed that he was much dissatisfied. The reason could not be imagined. The vessel had so little motion, it was thought it could not originate from sea-sickness. I therefore told the interpreter to inquire of him what was the matter. No answer was given for some time, but they consulted much among themselves in a low tone. The question was repeated, when the old chief's wife answered, "that I had not returned the present that had been offered me, and that the chief was not pleased; for, according to their customs, the offering a present to me entitled him to receive one in return." As very many gifts had been made him already, this amused me not a little. On asking what it was they wanted, they at once signified whiskey, which they said was

always given them when they went on board ship; and the chief wanted some, for he was very sick. I accordingly ordered a bottle of water with a gill of whiskey in it to be given them, and the moment they smelt it their manner was changed; they became all animation, and left the ship in great good humour. Mr. Waldron presented them with two sheep, of which they appeared very proud. The brother was quite an intelligent native; he drew for me with a piece of chalk, on the deck, with considerable accuracy, all the islands he was acquainted with, giving their relative situations, and the native names; —that of the island we had seen the day before, as Tai-a-ra, and the one to which I had given the name of Vincennes Island, as Kawahe. He informed me of three small islands to the southward of Sacken, which were afterwards found by the Porpoise, during the cruise to this group on which I sent her in 1840; his knowledge of the western part of this group was quite surprising.

On the next day we landed early, and passed the whole of it on shore, making observations. We found this was taboo-day, or their Sabbath, although it was Saturday with us; and all the natives seemed to be enjoying its quiet and repose. Few of them were to be seen, and they exhibited but little curiosity. No persuasion could induce them to employ themselves in getting fish and shells for us on this day. We obtained a full set of observations to determine the position, and also those for magnetic results. I place the entrance to the lagoon of Raraka in longitude 144° 57′ 40″ W., latitude 16° 06′ 25″ S. The result of our day's observations gave the tides, at full and change of the moon, two o'clock, and three feet in height; the shore, however, showed that there were at times very high tides. The natives said, when it was a round moon they had very high water.

The entrance to the lagoon is on the north side of the island, about one-third of its length from the western end. It is a narrow passage, but will admit a small vessel. The current runs very strong out of the lagoon, so much so, that a boat cannot be pulled against it. The water in the entrance is from five to eight fathoms deep, but there is no advantage in entering, as the reef is quite as steep within. A small vessel may anchor on the outside, in ten fathoms, close to the shore. This island is nearly of the shape of an equilateral triangle, and its southern and eastern sides are formed by a submerged reef. It is fifteen miles on each side.

The chief, on our second visit, was at first not altogether free from alarm at the sight of so many persons on shore; but each one bringing himself, his wife, or people, some small present, soon reconciled him to their presence. Among the sailors he contrived to get some grog

which intoxicated him, and he became of a most joyous temperament and full of affection.

The way of catching fish practised here is quite amusing, and to it we owe the many specimens in that department of natural history which we obtained. The natives enjoy the sport amazingly, and both old and young are all in some way participators in it. Near the mouth of the lagoon are laid some coral stones, forming a rude and shallow pen, with a channel leading to it; several natives proceed about one-third of a mile up the beach of the lagoon, where they enter the water, ranging themselves in a row, the tallest in the deepest water. They then move along down towards the pen, quite noiselessly at first, driving the fish before them. As they approach, they begin to splash and make a noise; the clamour gradually increases, until it becomes one continued shout. They then contract themselves towards the pen, and the fish are seen jumping and dashing in all directions, as if very much alarmed, until they are forced to enter the pen, which is then closed with a few stones; afterwards the natives begin to spear them with great dexterity, and many were obtained. It was gratifying to witness the pleasure that both old and young appeared to take in this employment, and quite surprising that the fish do not escape over the low wall that surrounds them, only two or three inches above the water; but they appear bewildered. The natives regretted that their success was so small, and imputed it to the water being too high. Some fresh water may be obtained here. The spring or pond is on the west side of the entrance. What the natives had in their cocoa-nut shells was sweet. It is, however, in no great abundance.

Many specimens were here added to our collections. This was one of the islands in which I attempted to sound the lagoon. We began at the entrance, but found, within a very short distance, that the depth increased to thirty fathoms, the water being as blue as that of the ocean. So great a depth made it an undertaking far beyond what my time allowed. The sounding, in every case of any depth, was coral sand.

Towards sunset we all embarked, and my leave-taking with the old chief was amusing, He with all his household and retinue, began to cry and whine over me, so that I was glad to escape from the display of so much friendship and parental affection.

After reaching my ship, the Porpoise again joined us. She had been despatched early in the morning towards the eastern end of the island, to ascertain its extent, and fix its point in that direction; not being able to accomplish this, Lieutenant-Commandant Ringgold returned for further orders. This night we lay-to under the lee of

Raraka; but as it proved dark and squally, we stood to the northward, and about one o'clock we were surprised by seeing a signal from the Peacock, of danger close aboard, under the lee. I immediately tacked, and we soon cleared it. It proved to be the reef of Kawahe, over which the surf was breaking violently. The Peacock was so close to it, that Captain Hudson felt himself obliged to stand on his course rather than run the risk of missing stays, and continued to run along it for several miles, until, by its trending to the westward, he was enabled to clear the danger.

On the 1st of September, at daylight, we found ourselves between the two islands, and the Peacock was out of sight; but two hours afterwards, she was again seen. I made signal to the Porpoise, and despatched her to examine the southeast side of Raraka, and thence to follow on to the westward as far as Krusenstern's Island, passing along the south side of Nairsa or Dean's Island. I then despatched the Peacock to the north end, and the tender to the south end of Kawahe, to secure meridian observations, whilst the Vincennes was employed in surveying its eastern shores. The wind was well adapted to our object, and at sunset we met off the north end, having completed our work. The current was tried, but we found none. The wind was fresh from the eastward, with occasional squalls. On the morning of the 2d, I determined to land the naturalists on the newly-found island, and for this purpose made signal to the tender to come within hail. My ship was lying with her main-topsail to the mast, and forging ahead about a knot an hour. The tender came up on our lee quarter, and luffed in an awkward manner, directly across our bow. Her mast just escaped coming in contact with our jib-boom. I at once ordered all the sails of the Vincennes to be thrown aback, which stopping her way, prevented the dreadful accident of running the tender down. It was a most miraculous escape.

We landed on Vincennes Island, and obtained the usual observations. Its south point is in latitute 15° 59′ 48″ S., longitude 145° 09′ 30″ W. It was found to be sixteen miles long by ten wide; its greatest diameter lying north and south. It is a narrow annular ridge, consisting of many blocks and slabs of coral, which give a clinky sound when struck. The coral shelf seemed to dip in one place at an angle of 15°, forming a ridge, which was so low that the tide was beginning to flow over it before high water. There is an opening into the lagoon on the southwest side; on its southeastern part is a high clump of trees, looking like a knoll at a distance. The rest of the island is covered with a growth of bushes, ten or twelve feet high. The blocks and slabs above spoken of were very much water-worn, and were strewn

about on the coral shelf. This, where I measured it, was five hundred feet wide, but it is not of equal width in all parts. Among the coral blocks was some sand, and in many of them were found large specimens of the chama and other shells. I was informed at Raraka, that there were a few inhabitants on Vincennes Island, but none were seen by us. They were said to live on the southern end of it.

After finishing our observations, we returned on board, and made sail for Aratica, or Carlshoff Island. We arrived off it in time to secure its connexion with Vincennes Island: the distance was found, by patent log, and astronomical observations, to be twenty miles to the westward. We then stood on and off its eastern point for the night. The next morning at daylight we began its survey. The tender was despatched round its northern shore, whilst the Peacock and Vincennes took its southern side, running close along the reef, which continued submerged until near its southwestern end, which is twelve feet high and thickly wooded. On rounding the point, we saw a white flag waved by several natives on the beach. I immediately despatched a boat, with an officer, who brought off two of the principal natives, one of whom spoke a little English, and proved quite intelligent. One of these natives was tattooed only on one side, from the pubis to the sternum, bounded by broad blue bands, which divided and terminated under each ear.

NATIVE OF PAUMOTU GROUP.

He reported that there were about twenty natives on the island, and that they had frequent intercourse with vessels that had visited them. They informed me that water was to be had on the island. Finding ourselves short of this necessary article, I despatched several boats to procure it. Aratica is eight miles in length by five in breadth.

All the naturalists were sent on shore, with as many of the officers as could be spared from duty. We landed near what the natives called their village. This consisted of one or two huts, built in a grove of large trees, consisting principally of Pisonias, fifty or sixty feet in height. Some of these had been felled (with a small hatchet, of which they possessed only one,) to build canoes. It is principally used for out-riggers, being light and durable, and well adapted for that purpose. We found two canoes partly dug out. The woods were quite thick and forest-like. The inhabitants of the village consisted of four men, two women, a dog, and a cat; the remainder of the inhabitants live on the northeast side. The lagoon abounds with fish, and has several small coral knolls in it, though none with much vegetation on them. This is the most elevated of the low coral islands we had yet met with.

It has a deep entrance into its lagoon, on the west side.

The same formation presents itself here, of three distinct shelves: the one submerged, narrow, and shelving rapidly, the other broad, level, and covered at high water, but quite bare at low, and having the same longitudinal cracks in it. On the upper one is the usual accumulation of coral debris and sand, on which the vegetation grows.

On the lagoon side the beach slopes gradually, and there is seldom found any decided break, from which to judge of the thickness of the coral shelf. On the upper shelf, some large compact coral blocks are found. One of these, which I measured, was ten by twenty feet. It rested upon two small fragments, the remainder having been gradually worn away by the washing of the sea; it seemed, in fact, to be a part of that forming the second or upper shelf of coral. The following wood-cut comprises several that were seen on the coral islands, and will give an idea of their shapes. The highest point of the island was twelve feet above low-water mark.

CORAL BLOCKS.

The fresh water is procured from a large pool, about fifty feet in

diameter, and of considerable depth; it is about half a mile from the village, to the north, and situated within the line of woods. Watering is very troublesome and fatiguing when the boats are outside, and it is necessary to transport it a long distance; but having leathern watering-bags, it was less difficult for us. By entering the lagoon through the opening, the boats could approach very near the pool. There would be some difficulty in passing into it when the tide is setting out. It was reported that there was enough water to supply the squadron. The water was thought by some to be a little brackish, but it was found quite potable.

Many botanical specimens were obtained here, similar to those collected on the other islands; also several birds, a harmless scorpion, and lizards, the same as found on the other islands.

The reefs were covered with Holuthuria and some Biche-de-mar, but none of the valuable kinds; we also obtained a large number of shells. The fish here are said to be poisonous; but the natives, we understood, eat some of the kinds, so that the remark does not apply to the whole. The position of the west point of the island was determined to be in longitude 145° 39′ 46″ W., and latitude 15° 26′ S.

Having obtained all the water we could in the afternoon, amounting to three hundred and ninety gallons, I directed the course of the squadron to the northward and eastward, towards King George's Group, having fresh breezes from the east-northeast. The next day at noon, the most southern island was in sight, and finding the ships could not make it without much loss of time, I despatched the tender to the group, with orders to circumnavigate and examine the islands, and then to follow us to Tahiti; whilst the Vincennes and Peacock bore away to the westward, for the doubtful island of Waterlandt. At 5 P. M. it was discovered from the masthead, and at six from the fore-yard, bearing northwest-by-north.

We stood on and off all night, and at daylight again made the land; we reached its north point at four o'clock P. M., when the Peacock was ordered to take the east, whilst the Vincennes took the west side; we continued the survey until dark, when we took the necessary angles to resume the work in the morning. Many natives were seen, and smoke was rising in several places. On the 6th of September, we continued our surveying operations, and shortly afterwards joined the Peacock, Captain Hudson having completed his side of the island. The Peacock now made the signal of land to the westward. Wishing to land and make an examination of this island, as well as to have communication with the natives, the boats were lowered, and the naturalists from both vessels, and many officers, landed, and rambled

over the western part of the island for several hours. The few natives were very friendly, and informed us that the native name of the island was Manhii. This is, in all probability, the Waterlandt of Schouten and Le Maire, and also Wilson's Island of the Duff. There is a large and deep entrance in the southeast end into the lagoon of Manhii Island, in which, the natives informed me, vessels had often anchored, whilst engaged in the pearl-fishery. Many cocoa-nut trees were seen on this island, and fresh water is to be procured from a pool on the southwest side. The island at this end is upwards of half a mile wide to the lagoon; the coral reef is here quite broad. Soundings are not to be had with one hundred fathoms of line, fifty feet from the edge of it.

There were some small compact coral rocks here and there, but no regular upper or second shelf; the lower coral shelf was three hundred feet in width, and had many long longitudinal cracks, from six to eight inches wide, resembling those seen in ice-fields. In some places these were quite deep, and in the chasms numerous shells of the chama species presented to our view their beautiful colours. Some of the gentlemen reported that they found a stone sarcophagus, or something much resembling one. We made a set of magnetic observations on this island, and many shells, plants, &c., were procured.

To our surprise, one of the men of the Peacock, by the name of Penny, here deserted from the boats. He had been formerly much among the islands, engaged in pearl-fishing, and spoke the language well. Strict search was made for him, until the officer in charge of the boats became satisfied that he had no intention of returning. On hearing of it, I was convinced that he had chosen this opportunity to leave us, particularly as he must have been aware that there is very frequent communication with Tahiti. The chief of this island informed us that he was a relative of the one-handed chief of Raraka.

The east end of the island lies in latitude 14° 26′ 22″ S., longitude 146° 04′ 20″ W.

Several of us had our feet severely blistered, from going barefoot on the reefs, and were made very uncomfortable from this cause. After returning on board, we bore away to the other island, to which the natives gave the name of Ahii. I have also added that of Peacock Island, to mark that its correct position was first established by the Expedition. It lies west three-fourths north per compass from Manhii, and was found by the patent log to be eight and six-tenths miles from reef to reef. On coming up with it, the Vincennes and Peacock took opposite sides, and surveyed it; and the next morning parties landed. I was hardly able to move, on account of my feet, but the desire of getting observations of the eclipse, urged me to make the attempt; I

only succeeded in getting the last limb and good observations for time. After four o'clock, we returned on board. This island is not inhabited, and has only a small boat-entrance into its lagoon, on the west side. The coral belt is similar to that last described; it was found to be upwards of half a mile in width, and was covered with the same kind of vegetation as the last, excepting cocoa-nut trees, of which none were found on the island. The lagoon is quite shallow. A favourite fish with the natives is found in it, and at certain seasons they visit the island for the purpose of catching them. The coral shelf varied from two to five hundred feet in breadth.

Being desirous of making the examination of as many of the coral islands as possible, I now despatched the Peacock to the Arutua or Rurick Islands, with directions to examine them, and then to proceed along the south side of Dean's Island, whilst, in the Vincennes, I steered for the north side of the latter, to pass along it. We then parted company, and Dean's Island was made by us the next morning. After establishing our position, we ran along the northern shore, and reached its western point at 4 P. M. Off this point we obtained sights for our chronometers, which put it in longitude 147° 58′ 34″ W., latitude 15° 05′ 15″ S. During the day we passed an entrance into its lagoon, and some natives came off from a small village, in two canoes, to visit us. They acknowledged themselves subjects of Queen Pomare of Tahiti, and were very desirous we should land. They brought off a few shells, and told us they had many fowls, pigs, taro, &c. There are several islets in the lagoon covered with trees. Vast numbers of large blocks were seen lying on its reef. The shore-reef is not more than two hundred feet wide, and is composed of only one shelf. The current was tried, but none was found. We had the wind very fresh from east-by-north all day. When off the western point we discovered Krusenstern's Island to the west, and hauled up to pass between it and Nairsa. The passage was found to be twelve and two-thirds miles wide, and free from all danger. In the evening I stood for Metia Island, to the southward. Nairsa or Dean's Island was found to be sixty-six miles in length.

On the morning of the 9th of September we were in sight of Metia or Aurora Island, the north end of which is in latitude 15° 49′ 35″ S., longitude 148° 13′ 15″ W. It was totally different in appearance from those we had met with, though evidently of the same formation. It was a coral island uplifted, exposing its formation distinctly, and as such was very interesting. On approaching its eastern end, I sounded at about one hundred and fifty feet from its perpendicular cliff, and found no bottom with one hundred and fifty fathoms of line. The

cliff appeared worn into caverns. We landed close in its neighbourhood, and on measuring its height, it proved to be two hundred and fifty feet. The coral shelf was found to be five hundred feet in width, extending on the north side of the island, and gradually diminishing in width until it loses itself at the western end. This island has all the features that one would naturally be led to expect from a low island uplifted. The north, east, and west sides present a perpendicular cliff or wall, but this character does not prevail on the south side, although it has some high knolls. The north ridge is nearly level, and there is a break through it (by which we ascended to its top) very much like the opening of a lagoon. The north side is concave, and there is found within the indentations between its two points, an extensive inclined plane, composed of large masses of limestone and vegetable mould, on which the village is situated, in a luxuriant grove of bread-fruit, cocoa-nut, pandanus, and other trees, similar to those already spoken of, as seen on the other islands. There were several copious springs, but the natives informed me that there were no running streams on the island.

The natives all seemed delighted to see us, crowding around my boat, and assisting to haul it up; men, women, and children flocked around us; all the population were gathered, to the number of about three hundred and fifty. We were at once invited to the chief's and native missionary's house, situated in the centre of the village. The house was constructed of the bread-fruit wood, for a frame, and reeds of the wild sugar-cane for the uprights, with interstices for the passage of the air, and lining of mats to exclude it when required. It was well thatched, and the whole had a cool and comfortable appearance. Cocoa-nuts were soon brought us, and all our questions were answered with an alacrity and pleasure that showed their strong desire to oblige and assist us.

The natives had gathered in crowds around the door to look at us.

They were a fine-looking race, though forming rather a motley group. The manner of carrying their children particularly attracted our notice; it had a pleasing effect. We found it afterwards practised throughout Polynesia. Many questions were put to me, and now and then I could hear a voice saying, "Me ship, captain; me go Tahiti." All were more or less clothed in the cast-off garments of whites, and not very particular whether they possessed one, two, or parts of garments, as long as it appeared different from their own tapa, and of foreign fashion. This appeared more ridiculous, for on our first landing few were to be seen except in their native dresses, but shortly afterwards one might have believed the contents of all the old clothes shops of one

MODE OF CARRYING CHILDREN.

of our cities had been distributed among them: storm pea-jackets, light summer pantaloons, vests, capes of overcoats, bell-crowned hats, checked and red flannel shirts, most of which were torn or worn threadbare in many places; whilst the women had bedecked themselves with cocoa-nut oil and turmeric, giving them a bright orange cast. Their heads were adorned with flowers, and they evidently considered themselves in their holiday attire. They had an abundance of pigs and poultry. The rich soil on the upper and interior part of the island produced taro (Arum esculentum), sweet-potatoes (Convolvulus batatas), melons, yams, and some tobacco, while the bread-fruit and cocoa-nuts were hanging in clusters over their dwellings. They had also an abundance of crabs and fish; on our landing we found

them devouring the latter, with great gusto, raw, but the former they roasted. Here we again saw printed copies of several portions of the Scriptures, and found that many of them could read and write well. No spears, clubs, or warlike instruments were to be seen, and when I asked for them as matters of curiosity, they said they had no arms except two muskets, which were pointed out to me, hanging up under the eaves of the house. The native missionary, a man about fifty years of age, told me that in times past they had "all war," but now all was peace. I was desirous of knowing to what he imputed the change, and he very readily answered, "Mittionari, mai-tai, mai-tai," (missionary, good, good). They acknowledge the authority of Pomare of Tahiti. Dr. Pickering, who was in company with me, came to propose that we should ascend the bluff, which the chief, being made acquainted with, readily gave his consent to, and sent for two men to accompany us. We ascended through the narrow break, twenty to thirty feet wide: the natives had improved the path up by placing the clinky slabs of compact coral, as a rude pavement, and for steps, in order to make the communication more easy to their planting grounds. On reaching the top, we found ourselves in a wood, and wishing to get a view of the interior, we made for the east end, passing occasionally over beds of clinky coral, thrown and scattered in all directions. After a walk of more than a mile, we came to an open space, from which we had a clear view of the interior of the island, which was found to be densely covered with trees. The general shape, as far as it could be seen, was pan-like, or in the form of a dry lagoon.

This island was particularly interesting, from its combining both high and low vegetation; and a very considerable collection of plants was obtained. Several pigeons were seen, two of which we obtained; they were of a large species of Columba oceanica, that inhabits these groups. We crossed many large fissures, running in a line with the cliff, some of them two or three feet wide, in which trees of some size were growing.

As far as our observations went, the upper portion of this island is composed of limestone or compact coral rock; the cliff, on its eastern side, where we first landed, appears stratified, horizontally, in beds of ten to twelve feet in thickness, of a sort of conglomerate, composed of shells, coral, and pieces of compact rock, cemented together by a calcareous deposit. The under part of this bed had been much worn by the sea; the rich soil was composed of vegetable matter and decomposed limestone. The slabs that were lying loose upon the surface had a clinky or metallic sound when struck. The island has unequivocal

marks of having been uplifted at different periods; the cliff, at two different heights, appears to have suffered abrasion by the sea. Stalagmites were observed under the cliffs, and some stalactitic columns, fourteen feet high by six in diameter. On coming towards the village, we saw many natives returning with loads of taro, &c., which they had been sent to gather. On our return, we were taken again to the chief's house, and entertained with cocoa-nuts, baked taro, and bread-fruit, which had been cooked during our absence. At the boat we found more articles for purchase than we had the means to pay for, or the boat could carry; and every one seemed desirous of securing the sale of his fruits and vegetables. Notwithstanding the over-supply, the prices were I thought rather enhanced than lowered, and there was an evident feeling among the crowd that we had not been so liberal in buying as we ought to have been. I was glad to get off, in order to be freed from the flies, which are in incredible numbers in all the inhabited islands, and a great nuisance. I left the island under the impression this little community was a happy and contented one. At about five o'clock, we joined the ship, some distance to the southward of the island; all the surveying boats having returned, we bore away for Tahiti, at which island we arrived on the 10th. At 5 P. M., Lieutenant-Commandant Ringgold boarded us, and brought off Jim, the pilot; he reported all well on board the Porpoise. At sunset, we anchored in Matavai Bay. I hastened to ascertain the correctness of our chronometers, and the next day landed the instruments on Point Venus, and took observations. They gave for its longitude 149° 31′ 13·5″ W. Krusenstern makes it 149° 29′ 17″ W.

Lieutenant-Commandant Ringgold, in the Porpoise, after parting company on the 1st of September, proceeded to the south side of Raraka, in fulfilment of his instructions. He found the whole southern part of it a bare reef, with the surf breaking violently over it. When off the south point, he made the isle of Katiu or Sacken to the south, and that of Makima to the east, and connected them; after which he proceeded to the westward, passing Aratica (Carlshoff), and thence to Nairsa or Dean's Island, which he made on the 5th; fixed its western end, passed along its south to its western side, and thence to Krusenstern's Island, to the westward, which he circumnavigated; from thence went direct to Tahiti, anchored in Papieti Harbour on the 9th, and the next day proceeded to Matavai Bay, the place of rendezvous.

On the 12th, the Peacock arrived, having passed to the Rurick Islands or Arutua, the north end of which lies in latitude 15° 15′ 00″ S., longitude 146° 51′ 00″ W. A landing was attempted at several places in the boats. One of them succeeded near a cocoa-nut grove,

but the two that went to land at the village, found the surf too high to attempt it.

The north shore of Arutua Island was surveyed, when they bore away, and connected it with Nairsa or Dean's Island, along which they ran the whole length of its south side by daylight. The last named island is for the most part a washed reef, with no opening. The compact coral blocks showed themselves here more conspicuously and in greater numbers than before seen.

The following sketch, by Mr. Agate, will illustrate their appearance.

After making the west end of Nairsa, Captain Hudson sighted Krusenstern's Island, and then stood for Metia Island, to the southward, on which the officers landed the next day on its western side. Their examination confirmed the facts already given, relative to its appearance.

Mr. Dana found some recent shells embedded in the limestone, but they had lost their texture.

On this island, the magnetic observations were made, with the Peacock's instruments. Captain Hudson also sounded with the deep-sea thermometer, when within a mile of the island, in six hundred fathoms; the temperature at the surface of the water was 80½°, that below, 44½°. The next day they made Tetuaroa, to the northward of Tahiti, formerly celebrated as the resort of the Tahitians, for the purpose of recovering from the bodily diseases brought on by their debaucheries, &c. It is a low island, about six miles long, with a few trees upon it, and a reef off its southern end, extending half a mile. It is plainly to be seen from the high ridges of Tahiti.

On the 14th, the Flying-Fish arrived. She had visited and surveyed King George's Group, which appeared well inhabited, and have entrances to their lagoons on the west side. The native name of the two islands, is Tiokea and Oura. The southwest end of Tiokea is in latitude 14° 31′ 12″ S., longitude 145° 09′ 30″ W.; Oura bears S. 68° W., distant four and a half miles. Then the tender passed to Manhii and Ahii, round the north side of Nairsa, or Dean's Island, to Tahiti.

Little appears to be known of the history of the Paumotu Islands, or their inhabitants. At Tahiti I obtained some information from one who had been much among the group, and believe that it is as authentic as can be obtained, and may be relied on.

The Island of Anaa, or Chain Island, has been the principal seat of power, the natives of which had frequently waged war on the others, and succeeded in conquering all to the west of Hau or Bow Island, with which they have frequently fought.

In the reign of the first Pomare, under Tomatiti, they even attempted the conquest of Tahiti, and succeeded in overcoming the small peninsula of Taiarabu. The story is, that they were about to continue their attack on the larger island, when Tomatiti received a written letter from Pomare, which caused hostilities to be suspended; and after further negotiation, finally led to Tomatiti's retiring from the island with a large present of hogs, tapa, &c. Notwithstanding this, the Chain Islanders remained nominally under the government of Tahiti, and now acknowledge their dependence on it.

Anaa, or Chain Island, is one of the smallest, yet it is the most thickly-peopled island of the whole group. It is said to contain five thousand inhabitants, which large number is accounted for by the conquest of the other islands, and taking their inhabitants off as captives. In the list of the islands and their population, it will be seen how few remain on the other islands in comparison with this number. The whole island is one cocoa-nut grove, and the principal food is fish and cocoa-nuts. The former are caught in large quantities in the lagoon. A great change has been brought about in the character of these islanders within the last twenty-five years, during which the Tahitian missionaries have been established at Anaa. Before this period, the inhabitants were cannibals. Since the residence of the missionaries, they have imbibed better tastes; and the Christian influence has also made them more peaceful. This change was first evinced by the treatment of their captives, whom they allowed to return, if they chose, to their own island; but very many of them had married at Anaa, and became permanent residents there, and few have taken advantage of the permission to return. Notwithstanding the numerous population, they are said to have an abundance of food. The people of Anaa still consider the inhabitants of the eastern islands as cannibals; but their statement in this respect is little to be depended upon, for they have no communication whatever with those whom they class under this denomination, seldom extending themselves beyond Hau or Bow Island.

The Paumotuans are considered more warlike than the Tahitians, for which reason Pomare I. kept a body-guard of them in preference

to his own subjects. They have the reputation of being an honest and trustworthy race.

These islanders are certainly not all from the same stock, and those of the Disappointment Group, whom we were much struck with at the time of our visit, in particular differ from the others. Since we have seen all the different Polynesian groups, these appear, however extraordinary it may be, to resemble the Feejee Islanders more than any other.

By all accounts, they speak a different dialect from that of the Tahitian nation. The difference is, however, not great, for I was told that it required but a few weeks for any of the natives to acquire it. Mr. Hale met several Paumotuans at Matavai Bay, and among them he found one by the name of Tuoni, who confirmed the accounts I have detailed above.

The population of this group I have nowhere seen given; I have therefore endeavoured to obtain the most satisfactory information in relation to it: the whole amounts, in round numbers, to about ten thousand, as follows:

Anaa	5,000
Manhii	100
Aratica	60
Nairsa	70
Metia	350
Rurick	200
King George's	700
Vincennes	30
Raraka	40
Wytoohee	70
Otooho	40
Bow Island	60
Manga Reva, or Gambier Island	2,000
Serle Island	30
Clermont de Tonnerre	120
	8,870
Rest of the group	1,130
	10,000

On the map of this group it will be seen to where the line of cannibalism extends, according to native accounts. It may be said to divide them into two divisions, the Christians and Heathens, or perhaps, more properly, the eastern and western; the whole comprise sixty-five islands. Although there is little doubt that the natives of this group have been addicted to this horrible barbarity, yet it is believed that it is not now practised.

The advancement of civilization by their intercourse with the whites, together with the missionary influence, will put an end to this practice, and promote peace among all the islanders of the group; not only ameliorating the condition of the natives, but protecting the unfortunate mariner who may be wrecked within this dangerous archipelago.

From what has been said of the Paumotu Group, it is evident it can afford but few advantages for commercial enterprise; the only article which of late years has been sought for among the islands, is the pearl oyster-shell, of which considerable quantities have been obtained. The return will be noticed under the commerce of Tahiti, of which it forms a part. The vessels engaged in the fishery belong to foreigners, who reside at Tahiti. The mode of taking the oysters is by natives, who are employed as divers, for a very small compensation. It is much to be regretted, that the traders should have recourse to the demoralizing effects of spirits, in stimulating their exertions.

The natives themselves carry on a small trade in their double canoes, which it will be seen by the wood-cut below, have already undergone some modifications from that already given on a previous page, as formerly in use. These are principally the Chain Islanders, who supply themselves at Tahiti with various small articles, in exchange for their cocoa-nut oil and dried fish.

TRADING DOUBLE CANOE.

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APPENDIX.

I.

STATEMENT IN RELATION TO LIEUTENANT HUDSON'S GOING OUT IN THE EXPLORING EXPEDITION, UNDER LIEUTENANT WILKES.

Lieutenant Hudson received orders, while first lieutenant of the navy-yard, New York, to proceed to Washington. On his arrival, he was told by the Secretary of the Navy, the Hon. Mahlon Dickerson, that he had been sent for to go out in the Exploring Expedition, and was directed to see Mr. Poinsett, then Secretary of War, under whose direction these arrangements had been placed. After an interview with the Secretary of War, the Secretary of the Navy, and the President of the United States, Lieutenant Hudson declined going out in the Expedition, under Lieutenant Wilkes, in consequence of his rank, and the military character of the Expedition. Lieutenant Hudson left Washington, returned to New York, and resumed his duties as first lieutenant of the navy-yard, under Commodore Ridgely.

After a short period the following communication was received from the Hon. Joel R. Poinsett.

II.

[Copy.]

Washington, June 5th, 1838.

Lieutenant Hudson, U. S. Navy,

Sir,—The anxiety I feel, in common with the whole country, for the success of the Exploring Expedition, and the high estimate I have formed, from the testimony of your brother officers, of your character and abilities, render me exceedingly desirous of securing your services

as its second officer. Not only is it of great importance that the commander should have as his second in command, an officer in whose zeal and efficient co-operation he can rely, but the government desires the choice should fall on one possessing the necessary qualifications in case of an accident to that officer, to carry out the objects of the Expedition, and to conduct it in safety to our own shores. With these views and wishes, I have seen, with regret, that a mere matter of etiquette prevents you from engaging in a service for which you are so well fitted.

Regarding as I do the practice of giving officers temporary appointments as illegal, and prejudicial to the service, I could not recommend to the President to sanction its continuance for three years longer, by granting such appointment to the officers of the Expedition.

It does not, however, appear to me, that this decision ought to present an obstacle to your accepting a command under Lieutenant Wilkes, whom you rank by what must be considered an imaginary line.

If the Expedition were of a *military character*, I would not attempt to combat your scruples; *but it is purely civil*, and even should a war break out between the United States and any naval power, your path upon the ocean would be peaceful.

It is the opinion of the President, as well as my own, that an Expedition, undertaken to promote science, and extend the bounds of human knowledge, ought to command the services of all who can contribute to its success, in whatever station it may be thought most advantageous to place them; and I venture to hope, that waiving all claim to superior rank, you will accept the command now tendered you.

I am, sir, respectfully yours,

(Signed) J. R. Poinsett.

III.

After Captain Hudson was assured that a General Order would be published, divesting the Expedition of its military character, and consulting Commodore Ridgely,—well known in the service for his high sense of honour, and thorough knowledge on all points of etiquette and duty, and for whose judgment he had great respect, whose decided opinion and advice was, that it was his duty, as an officer of the government, under the circumstances of the case, to accept the command and go out in the Expedition,—Captain Hudson sent the following acceptance.

U. S. Navy-Yard,
New York, June 16th, 1838.

Sir,—

The peculiarly delicate situation in which I felt myself placed in relation to Lieutenant Wilkes, must be my excuse for the delay which has occurred in replying to your communication of the 5th instant, proffering to me the situation of second in command of the Exploring Expedition.

The coincidence of opinion between the President and yourself in relation to its character in a military point of view, the claims of the nation upon the services of its officers, with the very flattering suggestion contained in your letter, have outweighed my scruples. I, therefore, from a sense of duty, accept the command, and tender my best services to promote the objects of the Expedition, and advance the honour of our common country.

Very respectfully, yours,
(Signed) Wm. L. Hudson.

To the Hon. Joel R. Poinsett,
Secretary of War.

The following order was issued:

IV.

NAVY GENERAL ORDER.

The armament of the Exploring Expedition, being adapted merely for its necessary defence while engaged in the examination and survey of the Southern Ocean, against any attempts to disturb its operations by the savage and warlike inhabitants of those islands; and the objects which it is destined to promote being altogether scientific and useful, intended for the benefit equally of the United States, and of all commercial nations of the world; *it is considered to be entirely divested of all military character*, that even in the event of the country being involved in a war, before the return of the squadron, its path upon the ocean will be peaceful, and its pursuits respected by all belligerents. The President has, therefore, thought proper, in assigning officers to the command of this squadron, to depart from the usual custom of selecting them from the senior ranks of the navy and according to their respective grades in the service; and has appointed Lieutenant Charles Wilkes, first officer, to command the Exploring Expedition, and Lieutenant William L. Hudson to command

the ship Peacock, and to be second officer of said squadron, and take command thereof, in the event of the death of the first officer, or his disability, from accident or sickness, to conduct the operations of the Expedition.

(Signed) MAHLON DICKERSON,
Secretary of the Navy.

Navy Department, June 22d, 1838.

V.

MEMORANDUM FOR THE COMMANDER OF THE EXPEDITION TO EXPLORE THE SOUTH SEAS, BY ADMIRAL KRUSENSTERN.

NOTE.—The asterisk after the number of some of these articles, denotes that the islands, &c., have been examined by the Expedition.

I. I HAVE pointed out, in the supplementary volume of my Hydrographical Memoirs, (pages 19, 96, and 113,) several islands, the existence of which does not appear to be subject to any doubt, but of which the position is not determined with the best precision. It is much to be wished that all such islands were to be visited, and their position verified. With respect to the islands of rather doubtful existence, the names of which I have given, (pages 156–165, supplement,) there is certainly no other method of ascertaining their existence than to search for them, and to determine, with the greatest precision, the latitudes and longitudes of such as are found. A great number of these imaginary islands will then, of course, vanish from the charts.

II. Captain Bligh discovered, in the year 1789, to the northward of the New Hebrides, a group of islands, which he named *Banks's Islands;* and Captain Wilson, another cluster of islands, to the northward of the Santa Cruz Islands, named by him *Duff's Group.* Neither these nor the Banks's Islands having been since seen, it would be well to make a new survey of them.

III. *Islands of Santa Cruz.*—In my Memoir, belonging to the chart of these islands, I have discussed the situation of Carteret's *Swallow Island*, and expressed my belief that the islands seen by Captain Wilson in 1797 are the same as Swallow Island. Captain Freycinet is of the same opinion, and, by a new survey of Wilson's Island, confirmed this hypothesis. There remains, then, no doubt that Byron's Swallow Island does not exist; but, as it still continues to be delineated on some

of the latest charts, it would be well that its non-existence should be equally proved by the American Expedition.

IV. *The Solomon Islands.*—These islands have partly been visited by D'Urville and Shortland, partly by D'Entrecasteaux; and several English ships have at different times sailed through them; but a complete survey of all the islands composing this great archipelago is still wanting. It is indeed very singular that, of all the navigators who have lately visited the Pacific Ocean, none have ever attempted any thing like a systematic survey of these islands, with the exception of D'Entrecasteaux, who, at least, sailed along the southern islands, from east to west, and thus greatly improved the hydrography of them. I have published, in the year 1827, a chart of these islands, (Carte Systématique de l'Archipel des Isles Salomon.) Having collected all the materials that were to be had at that time, many of them in apparent contradiction to each other, I endeavoured to reconcile them, and to delineate the islands belonging to this archipelago, to the best of my judgment. (An account of my proceedings will be found in the Memoir accompanying my chart.) By the first survey of these islands, it will be seen whether some of my combinations have been well founded or not. The Solomon Islands being the greatest archipelago in the Pacific Ocean, and the least known, deserve, no doubt, to be as completely surveyed as the Society, Friendly, or other groups. Although ten years have elapsed since my chart was published, nothing has been done since that time for the hydrography of these islands, to enable me to improve the second edition of that chart, (1836,) except in the situation of a group of islands, discovered lately, to the northward of the Solomon Islands.

V. *New Caledonia.*—A dangerous reef has lately been discovered by the ship Petrie, to the northward of New Caledonia; the precise position of this danger ought to be determined.

VI. *Loyalty Islands.*—Captain D'Urville has been the first to survey the Loyalty Islands; but having sailed only along the northern side of them, it is to be wished that the southern shore might also be surveyed.

VII.* *The Feejee Islands.*—Captain D'Urville has done a great deal to give us a more correct chart of these islands, having surveyed a great part of them; but still he has left unexplored many islands belonging to this archipelago. In my supplementary memoir to the chart of these islands, I have endeavoured to combine Captain D'Urville's survey with such surveys as had been made previous to his voyage; and have constructed, according to all the data that have come to my knowledge, a new chart of the Feejee Islands, (named by Captain D'Urville, Viti Islands.) Of course the chart cannot be very

correct, but it may perhaps serve till a new complete survey is made of them.

VIII. *New Ireland.*—It is astonishing that nearly two centuries have elapsed without the islands situated to the north of New Ireland —first seen by Tasman, and since by Dampier and Bougainville— having been examined, so that we know as little of them as was known one hundred and fifty years ago. There remains, then, to be made a complete survey of all these islands. As to the islands near them, seen by Maurell, it is not likely that they are the same, as some have supposed. This is another reason why they should be all explored with the greatest precision.

IX. *Admiralty Islands.*—It is much to be wished that the islands seen by Maurell, to the eastward of the Great Admiralty Island, should be explored, since we know that Maurell's account of his discoveries does not satisfy the hydrographer.

X. *New Britain.*—Admiral D'Entrecasteaux has seen and determined, with his usual exactness, the islands situated along the north coast of New Britain; but he has not been able to lay down the *coast itself*, which he has seen only at a distance, and some parts not at all.

XI.* *Low Islands.*—Captain Hagemuster, of the Russian navy, discovered, in the year 1830, an island to the westward of King George's Islands. This island cannot be any other than Schouten's Waterlandt. Captain Wilson sailed between two islands, which he took to be King George's Islands. Most navigators have been of the same opinion; although there is a difference of longitude of more than a degree between the islands seen by Wilson and King George's Islands. Captain Duperrey, (an excellent authority, as every hydrographer will readily admit,) is of a different opinion; he maintains that the two islands between which Wilson sailed are not King George's Islands, but are situated to the westward of them. He thinks that the island seen by Captain Hagemuster, which I take to be Waterlandt, is one of the two islands; and that Captain Hagemuster has not seen the other. In order to refute Captain Duperrey's hypothesis, the second island, which, according to him, Captain Hagemuster might not have perceived, ought to be searched for, to the westward of Captain Hagemuster's island; if it really does exist, it cannot be at a greater distance than about fifteen or twenty miles.

XII.* Commodore Byron's *Isles of Disappointment* have not been visited since their first discovery in 1765. I have endeavoured to settle their longitude at 140° 42′ W. (page 87 of my supplement); but this being only an approximation, they ought to be surveyed—at leas' visited anew.

XIII.* By my Memoirs, page 281, and supplement, page 90, you will perceive that there is a difference of 27′ between Captain Bellinghausen's and Captain Kotzebue's longitude of the west point of *Prince of Wales's Island** and the island situated to the westward of it.† What may be the cause of this difference? since the two navigators do not differ, either before or after, more than three minutes. Either the length of Vlighen Island has been overrated by Captain Kotzebue, or some other error has crept into the longitude of either the one or the other. As both are excellent observers, it would be very desirable to settle this point, by examining and surveying carefully all the islands lying to the westward and eastward of Vlighen Island, and determine with the greatest precision the width of the channels separating the different islands, as well as the exact length of Vlighen or Prince of Wales's Island: the error will, most likely, be detected in the length of that isle.

XIV.* There is a difference of 17′ in the longitude of the isle *Clermont de Tonnerre* between Captain Duperrey and Captain Beechey. At Serle Island, close to it, there is hardly any difference at all. The same difference of 17′ exists in the longitude of Prince William Henry, which Captain Beechey has proved to be the same with Captain Duperrey's isle *Lortingo;* whereas at *Mollu Island*, both Captains Beechey and Duperrey agree perfectly well. It would be worth while to search for the cause of such anomalies.

XV.* Captain Beechey is of opinion that Captain Duperrey's isle *Clermont de Tonnerre* is one and the same with the island of Minerva. Captain Duperrey, on the contrary, maintains that the island Minerva is the same as Serle Island. I am of this latter opinion; although the solution of this problem will much depend upon the distance of the island Clermont de Tonnerre from Serle Island, which is much less on Duperrey's chart than on Captain Beechey's.

XVI.* There has been lately discovered an island of considerable extent, of the name of *Raraka*. It would be well to examine it, since the account given of it is not quite satisfactory. It is stated to be situated in 16° 3′ S., and 145° 0′ W.

XVII.* I have placed on my chart of the Low Islands, several islands, the position of which is rather doubtful; for instance, the *Bunyer's Group* of Turnbull, the island of *Britomart*, the islands discovered by Quiros, and several others. In order to have any certainty about their existence and precise position, it is necessary to search for and make a survey of them.

* On some charts this island is named Dean's Isle; on my charts Vlighen Isle.

† By Captain Porter called Gamble; by Captain Kotzebue, Krusenstern Island.

XVIII.* *The Islands of San Bernardo and the Islands of Danger.*—*Mendane* discovered a group of islands, named by him San Bernardo. These islands have been seen by Captains Freycinet and Bellinghausen. Not far from them Byron discovered a small group, which he named Islands of Danger. Notwithstanding a difference of latitude of half a degree, the two groups have been considered as one and the same. It has not been thought impossible that in Byron's latitudes there might have been a typographical error: besides, none, of all the navigators who have passed here, have ever found a second group, which they could not have missed if it really existed. Captain Duperrey, however, who is, as I have said above, a high authority in whatever relates to the hydrography of the South Seas, is of a different opinion: he maintains that Byron's Islands of Danger do exist. In order to settle that question, it is necessary to search under the meridian of the islands San Bernardo, as determined by Captain Bellinghausen, for these Islands of Danger in the latitude assigned to them by Byron, as well as for the chain of rocks of which he speaks, and which are situated, according to him, to the eastward. This has not been done yet, and it would be very desirable if it was done, in order not to leave the least doubt on the subject.

XIX.* *Marianne Islands.*—On Captain Freycinet's chart there is to be seen, to the southwest of the island of Assumption, rocks, by the name of Mary's. Rocks of the same name have been seen by La Perouse, to the northward of Assumption Island. In case the Expedition should extend its exploratory researches to the northern hemisphere, this doubtful point should be settled.

XX.* *Caroline Islands.*—These islands have been so well surveyed by Captain Duperrey and Captain Lütke, that there is very little now left to be done concerning them. I shall, however, point out here some islands that require to be determined with great precision: 1. The island named by Captain Morell, *Fasolis*, is most likely the same with Captain Lütke's, Farroilep; but a difference of 21′ in latitude, makes this doubtful. 2. Island *Lydia*, on Captain Duperrey's chart. We do not know by whom it has been discovered, nor who has determined its situation. 3. I have endeavoured to prove, in my Supplementary Memoir of the Caroline Islands, that the islands Bordelaire, Fame, Campbell, and the island St. Augustine, are one and the same. This hypothesis requires to be verified. 4. The Monteverde Islands ought to be surveyed; what Captains Monteverde and Morell, the only navigators who have seen them, have said of them, is not sufficiently satisfactory. 5. We see on Captain Duperrey's chart of the Caroline Islands, several islands, of which we know nothing more than the

name, viz.: Bumkay's, Quekin's, &c., and their existence and position remain to be ascertained. 6. The island of Arrecifos has, so far as my knowledge extends, been seen only by the ship Providence, in the year 1811. Not knowing much respecting it, it is to be wished that it should be surveyed.

XXI.* *The Island of Gilbert.*—At the end of my supplementary volume, I have pointed out what remains to be done in order to have a perfect knowledge of all the islands belonging to this archipelago.

Remark.—Independent of the American Exploratory Expedition, there are to be at the same time three others in the South Seas: two English and one French expedition. Many of the islands will of course be visited by all the expeditions; and it is to be apprehended that their longitudes, determined by the different astronomers of the expeditions, will, perhaps, not agree so well as might be wished. This difficulty will of course be obviated, by referring their astronomical observations to the longitudes of such places as are determined by absolute astronomical observations with the greatest precision, and those most likely to be visited by the ships of the expeditions. The positions we have in the South Seas, are *Point Venus*, in longitude 149° 29′ 17″ W., determined by the passage of Venus over the disk of the sun; *Port Honolulu*, in the island of Oaho, by occultation of several stars, in 202° 10′ E.; and *Port Jackson, Sydney Cove*, in 151° 17′ E., by an eclipse of the sun. In the northern part of the Pacific, *East Cape* 190° 16′ 10″ E., may be adopted as a well-fixed point, although not determined by absolute astronomical observations. With respect to the coast of South America, *Talcahuana*, the longitude of which was determined by Captain Beechey, to be in 72° 56′ 59″ W., seems to me a well-determined point. Captain Duperrey is not of that opinion; and it remains to be settled whether the longitude of Talcahuana, or Valparaiso, in 71° 33′ 34″ W., deserves the preference.

KRUSENSTERN.

St. Petersburg, January 26, 1837.

VI.

U. S. Ship Vincennes,
Hampton Roads, August 14th, 1838.

SIR,—

I have the honour to state, that since my arrival here, I have examined the General Requisition, complained of by Commodore Warrington and the Commissioners of the Navy, and find (as I was well aware was the case) it duly approved by me.

The articles that were stricken off the Requisition, were the most necessary for us of any thing contained therein; and I regret to say, that in consequence of the objections to allow *indispensable articles* for the service we are going on, we shall be obliged to go to sea much less efficient than we would had they been furnished, and which will compel me to subject the government to pay quadruple prices for the same articles at Rio de Janeiro.

I have to request, that you will show this letter to the Honourable Commissioners of the Navy, in order to notify them that the Requisition was not irregularly drawn, but duly approved by myself, and consequently assumed as my act.

I have the honour, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

HON. JAS. K. PAULDING,
Secretary of the Navy, Washington.

U. S. Ship Vincennes,
Hampton Roads, August 18th, 1838.

SIR,—

I have this morning ascertained that only one set of pump-gear is on board this vessel, and one on board the Peacock, which are now in use.

The pumps of the Vincennes are 6⅝ inches.
2 " Peacock " 6 "
2 " " " 6½

We are now otherwise ready for sea, but cannot sail without these, as they cannot be obtained elsewhere; also two kedges are required, and a hose for the pumps, and pipe for the hose of the forcing-pump, and an iron brake for the Vincennes.

I have to request the favour of you to direct that three complete sets of pump-boxes, &c., for each vessel, may be furnished to-day.

All these articles have been repeatedly called for by the officers from this ship, but without success.

I am, most respectfully, sir,
Your most obedient servant,

CHARLES WILKES,
Commanding Exploring Expedition.

COMMODORE L. WARRINGTON,
Navy-Yard, Gosport, Va.

VII.

U. S. Ship Vincennes,
At Sea, August 22d, 1838.

Sir,—

You will proceed with all practicable despatch to Port Praya, in the island of St. Jago, where you will remain five days, and then proceed to Rio de Janeiro, where you will await further orders.

During your stay at Port Praya, you will fill up with water, and supply your crew fully with fresh provisions and vegetables.

You will leave a communication with the consul of that port on your departure addressed to me, in case you should not hear from me before that period.

I am, &c.,
Charles Wilkes,
Commanding Exploring Expedition.

To Lieut. Com. A. K. Long,
U. S. Ship Relief.

U. S. Ship Vincennes,
At Sea, August 22d, 1838.

Sir,—

Should you arrive at Rio de Janeiro before this ship, you will inform the navy agent there, that about twenty-five thousand pounds of bread will be required at that port for the Exploring Expedition, on our arrival there, and request him to have the same prepared, of the first quality, that there may be no detention.

I am, &c.,
Charles Wilkes.
Commanding Exploring Expedition.

A. K. Long,
Lieutenant-Commandant Relief.

VIII.

GENERAL ORDER.—NO. I.

The squadron being now ready for sea, the undersigned, Commander of the Exploring Expedition, takes this opportunity to return his warmest thanks to the officers, scientific gentlemen, seamen, and marines, for the indefatigable exertions they have made in equipping the vessels in their several departments; being well aware that had it not been for the individual and united exertions of all, the preparations could not have been accomplished in the short space of time they have been; and he

feels confident that the same hearty zeal and co-operation will carry us successfully through the arduous service in which we have embarked.

To all the officers of the Expedition the undersigned would remark, that every feeling which a devotion to such a cause can inspire, is felt by him; and that every thing will be looked to, which can tend to insure success in this undertaking, may be confidently relied on.

Harmony and good feeling he would enjoin upon all; the necessity of cultivating this, and the united exertions of all, cannot claim too much of your attention. Continue as you have commenced, and rest assured that we shall be successful in meeting the expectations of our country.

You may rest assured also of receiving impartial justice from me, and that in the assignment of duties and promotions, if any should occur; and that all will have the opportunities they desire of entering upon the scientific duties, nothing shall be wanting that can tend to this end.

To the scientific gentlemen, I have only to say, that they are, and always will be considered as one of us, and that every opportunity will be given them that can be imagined by the undersigned or suggested by them, to promote the success of the Expedition, in their particular departments. My conduct towards them will be the same as towards the officers with whom they are associated.

Those composing the crews of the several vessels of the squadron, may be assured that every thing will be done to promote their comfort, and every indulgence granted them compatible with the interests of the service; and it is confidently expected that they will strictly conform to the rules and regulations of the navy, and of the squadron; and that the same respect for their officers, good conduct, and good feeling for each other, will exist at all times.

(Signed) Charles Wilkes,
Commanding Exploring Expedition.

U. S. Ship Vincennes.

IX.

ORDERS RESPECTING THE RECEIPT, SAFE-KEEPING, AND EXPENDITURE OF PROVISIONS, STORES, ETC.

A return of all stores and provisions will be made before sailing, and thereafter, on the 1st of each month, of all stores and provisions on hand and expended.

The Relief having a large proportion of stores on hand, no expen-

diture of stores will take place, unless by a requisition approved by me.

Great care and economy of stores is enjoined upon the commanders in regard to the expenditures of provisions and stores; and much is expected, in regard to their preservation and expenditure, from the well-known prudence and attention of the officer commanding the Relief.

The attention of the commanders of the respective vessels is particularly called to the expenditure of wood, and every precaution is enjoined for its economical consumption.

The monthly returns will not only embrace the actual condition of the provisions and stores, but the quantity of wood, water, &c., on hand, and expended.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
Hampton Roads, August 14th, 1838.

X.

GENERAL INSTRUCTIONS RELATIVE TO OBSERVATIONS.

THE surgeon and his assistants will take the meteorological observations at 3 P. M., 9 P. M., 3 A. M., and 9 A. M.; viz, the standing of barometer, thermometer, and hygrometer.

The temperature at the masthead, and that of the water, wind, weather, and the force of the wind, the quantity of rain, &c.; the officers of the watch will note and make any remarks of their own, regarding facts that may have occurred, (during their watch,) in the meteorological journal: all astronomical and atmospherical phenomena, it is desired may claim attention, and be noted under their respective heads. Astronomical phenomena, such as shooting stars, zodiacal lights, aurora borealis, the height of their arcs, their colours, &c., measured and the direction they take in the heavens. Atmospherical phenomena, such as rainbows, halos, water-spouts, lightning, appearance of the clouds, rain, the Magellanic clouds, to be noted when first observed; in short, any unusual appearance connected with the weather.

Of the sea, all phosphorescent lights, fishes, and all substances adhering to weeds, must not fail to claim attention, and specimens of them obtained. Fish caught must be preserved till opened in the presence of an officer, and their stomachs carefully examined, and if any thing is found, it must be taken care of.

Things and animals that might in ordinary cases be deemed trouble-

some and useless, are not to be lost sight of, but are to be picked up for examination.

Every opportunity of trying the current must be taken advantage of, and marked.

Astronomical observations, viz., lunar distances of the stars, east, and west of the moon, of the sun, and of the planets, to be frequently taken.

Observations for chronometers must be taken daily, mornings and afternoons, when the weather will permit; azimuths and amplitudes, at least once or twice a day, in the morning, or in the afternoon, and the ship's head noted at the same time.

Any of the officers (among whom are considered the scientific gentlemen) will on all occasions promote the objects of the Expedition by procuring any article referred to in the foregoing instructions, or aiding in carrying into effect the same. And the officer of the deck is authorized to stop the ship's way, and perform any evolution with a view of carrying into effect the above, in which case he will report the same immediately to me, if time does not permit his doing so previously.

It is necessary for the sea-officers to make themselves thoroughly acquainted with the heavenly constellations, in order to be efficient in noting the course of meteors, &c.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
At Sea, August 25th, 1838.

XI.

U. S. Ship Vincennes,
At Sea, August 25th, 1838.

THE undersigned, commanding the Exploring Expedition, in communicating the following instructions, from the Navy Department, for the government and information of those under his command, directs the particular attention of all persons in the Expedition to the same, and especially to that part of them, which prohibits any one furnishing to persons not attached to the Exploring Expedition, any communications which have reference to the objects or proceedings of the Expedition.

"Although the primary object of the Expedition is the promotion of the great interests of commerce and navigation, yet you will take all occasions, not incompatible with the great purpose of your undertaking, to extend the bounds of science, and promote the acquisition of knowledge. For the more successful attainment of this, a corps of

scientific gentlemen, consisting of the following persons, will accompany the Expedition, and are placed under your direction.

Mr. Hale, Philologist,
Mr. Pickering, } Naturalists.
Mr. Peale, }
Mr. Couthouy, Conchologist.
Mr. Rich, Botanist.
Mr. Dana, Mineralogist.
Mr. Drayton, } Draughtsmen.
Mr. Agate, }
Mr. Brackenridge, Horticulturist.

"The hydrography and geography of the various seas and countries you may visit in the route pointed out to you in the preceding instructions, will occupy your special attention; and all the researches connected with them, as well as with astronomy, terrestrial magnetism, and meteorology, are confined exclusively to the officers of the Navy, on whose zeal and talents the Department confidently relies for such results as will enable future navigators to pass over the track traversed by your vessels, without fear and without danger.

"No special directions are thought necessary, as to the mode of conducting the scientific researches and experiments which you are enjoined to prosecute, nor is it intended to limit the members of the corps each to his own particular service.

"All are expected to co-operate harmoniously in those kindred pursuits, whose equal dignity and usefulness should insure equal ardour and industry in extending their bounds and verifying their principles.

"As guides to yourself and to the scientific corps, the Department would, however, direct your particular attention to the learned and comprehensive Report of a committee of the American Philosophical Society of Philadelphia, the Report of a Committee of the East India Marine Society of Salem, Massachusetts; and to a communication from the Naval Lyceum of New York, which accompany, and are to be regarded as forming a part of these instructions, as far as they may accord with the primary objects of the Expedition, and its present organization. You will, therefore, allow the gentlemen of the scientific corps the free perusal of these valuable documents, and permit them to copy such portions as they may think proper.

"The Russian Vice-Admiral, Krusenstern, transmitted to the Department memorandums relating to the objects of this Expedition, together with the most approved charts of his Atlas of the Pacific Ocean, with explanations, in three volumes. These are also confided to your care, and it is not doubted that the friendly contribution of

this distinguished navigator, will essentially contribute to the success of an enterprise in which he takes so deep an interest. It being considered highly important, that no journal of this voyage, either partial or complete, should be published, without the authority and under the supervision of the government, at whose expense this Expedition is undertaken, you will, before you reach the waters of the United States, require from every person under your command, the surrender of all journals, memorandums, remarks, writings, drawings, sketches, and paintings, as well as all specimens of every kind, collected or prepared during your absence from the United States. After causing correct inventories of these to be made, and signed by two commissioned officers, and by the parties by whom they were collected or prepared, you will cause them to be carefully sealed by the said officers, and reserved for such disposition as the Department may direct. You will adopt the most efficient measures to prepare and preserve all specimens of natural history that may be collected; and should any opportunity occur for sending them home by a vessel of war of the United States, also copies of information, duplicates of specimens, or any other materials, you may deem important to preserve from future accident, you will avail yourself of the occasion; forwarding, as frequently as may be done with safety, details of your voyage, and its most material events; at the same time strictly prohibiting all communications, except to this Department, from any person attached to the Expedition, referring to discoveries, or any circumstances connected with the progress of your enterprise.

"It is believed that the officers under your command require no special advice or direction from this Department. Bearing in mind, as they no doubt will, that the undertaking in which they are about assisting to accomplish, is one that necessarily attracts the attention of the civilized world, and that the honour and interest of their country are equally involved in its results, it is not for a moment doubted, but that in this, as on all other occasions, they will so conduct themselves as to add to the reputation our navy has so justly acquired at home and abroad.

"With the best wishes for the success of the Expedition, and the safe return of yourself and your companions,

"I am, very respectfully, &c.,

(Signed) "JAS. K. PAULDING,

"Secretary of the Navy.

"Navy Department, August 11th, 1838."

(Signed) CHARLES WILKES,

Commanding Exploring Expedition.

XII.

GENERAL ORDER.

All the officers of the Exploring Expedition will be required to conform to the rules and regulations of the service, by keeping a journal during the cruise, which he will send to the commander of the ship to which he may be attached, weekly.

This journal will contain the daily reckoning, distances, bearings, &c., of the ship when at sea; also, a full record (with such observations and remarks as may present themselves) in relation to all occurrences or objects of interest, which may, at the time, be considered even of the least importance, and which may come under the observation of the officers, whether on board ship or on shore, and may tend to illustrate any transaction or occurrence which may take place, or afford any information in regard to the manners, habits, or customs of natives, and the position and characters of such places as may be visited. The journals required by this order will be disposed of agreeably to the directions of the Honourable Secretary of the Navy, and it is expected that they will be as full and complete as possible.

(Signed) Charles Wilkes,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
At Sea, September 13th, 1838.

XIII.

U. S. Ship Vincennes,
At Sea, September 13th, 1838.

Sir,—

As the officers may not understand the kind of journal it is necessary for them to keep, I take this occasion to make known the expectations of the government and my wishes respecting this part of their duty, which I consider as paramount to all others.

1st. The duties devolving upon all the officers of this Expedition are altogether of a public nature, and it is incumbent on me to say, require of them to bestow their constant and devoted attention to all incidents, facts, or occurrences, which may present themselves, in order that hereafter they may (if necessary) verify or confirm by their testimony any information in relation to the same, and thereby place the evidence beyond a doubt. This can only be effected by keeping

full and complete memoranda of all observations, made at the time, and entered in the journals.

2d. I consider it of great importance, that every officer should know the actual situation of the ship, from his own calculations, that when called upon at any moment, he might be able to refer to his own journal for the results. On this might possibly depend the safety and ultimate success of the Expedition, as one or two might fall into error, but it is not likely that many would.

3d. The kind of journal required is not a mere copy of the log-board, but it is a diary, in which will be noticed all that relates to public information, being a record of all objects of interest, however small, which may take place during the cruise, in the scientific or any other department: and the views of the officer ought to be briefly expressed concerning things that may come under his notice. The very record that *nothing* has transpired during the day, may be of use; but it is believed that this will be of rare occurrence.

The whole will form a mass of evidence for the use of the government on our return, which will tend to illustrate and make clear the transactions and occurrences that may have taken place, as well as the habits, manners, customs, &c., of the natives, and the positions, descriptions, and character of such places as we may visit.

These memoranda are highly essential to me, in order that nothing may be neglected or overlooked in conducting the Expedition to a successful issue, in which we are all so deeply interested. I wish particularly to avail myself of the results and observations of all, to avoid the possibility of passing over any subject without full examination and remark.

A casual memorandum or observation, believed at the time of little importance, may lead to important and satisfactory results. These journals, therefore, will become a useful medium of communication between the officers and myself, relative to the scientific and other duties in progress.

I trust I need not remark that the above relates entirely to public transactions. With private affairs I have nothing to do: they are, and always should be deemed sacred, and, consequently, will form no part of the records.

I enclose a special order relating to this subject, which you will promulgate to the officers of this ship.

I am, respectfully, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

THOMAS T. CRAVEN,
First Lieutenant, Vincennes.

XIV.

U. S. Ship Vincennes,
At Sea, September 14th, 1838.

As it appears to me that the bounty recently directed by the Fourth Auditor, to be checked against the marines now attached to the Exploring Expedition, was given to them by the authority of the Navy Department, through Commodore Jones, (as appears by his General Order, No. 1,) not as recruits, but in consideration of their obligating themselves to serve during the cruise of the Expedition, without reference to their term of service; I deem it, therefore, proper and just to order the Pursers of the Exploring Expedition not to check the bounty against the marines of the squadron under my command.

(Signed) Charles Wilkes,
Commanding Exploring Expedition.

To Messrs. R. R. Waldron and Wm. Spieden,
Pursers, U. S. N.

U. S. Ship Vincennes,
At Sea, September 14th, 1838.

Sir,—

It was with much surprise I learnt, a few days after sailing from Hampton Roads, that the pursers of the Exploring Expedition had received instructions from the Fourth Auditor to check the marines now in the Exploring Expedition with the bounty paid them in November, 1837, by order of Commodore Jones.

I flattered myself that I had, on sailing, overcome all the obstacles that had occurred, and I was not a little excited on finding that a new apple of discord had been thrown into the squadron, and particularly that part of it so valuable and necessary as the marines.

I presume, however, this has been done without a knowledge of the mischief it might produce in the efficiency and progress of the Expedition, if carried into effect.

As it appears that some of the marines who received this bounty had been in the service a long time, and none of them were recruits, and with a view of preventing any mischievous effects upon those now in the Expedition, I have issued an order to the pursers not to check the bounty referred to; a copy of which is herewith enclosed, marked No. 1; also a letter from Sergeant Stearns, in relation to the subject, marked No. 2; I take leave also to enclose a copy of the General Order issued by Commodore Jones to the Exploring Expedition in October, 1837,

marked No. 3, which appears to me to embrace the case, and has, in my opinion, pledged the faith of the government fully; whether he was authorized by the Department to give such pledges or not, is, I think, wholly immaterial to the present case. It has been done: and those who have complied and received the bounty, believed such to be the fact, which the Department alone could give, thereby binding the contract on the part of the government; which (acting for the best interests of the service in which we are engaged) I have thought proper to confirm by issuing the order referred to, which I cannot doubt will meet your approbation.

I have the honour, &c.,

(Signed) CHARLES WILKES,
Commanding Exploring Expedition.

To the HON. JAMES K. PAULDING,
Secretary of the Navy.

XV.

U. S. Ship Vincennes,
Off Madeira, September 20th, 1838.

SIR,—

Although, previous to sailing from Hampton Roads, I was aware of some of the deficiencies in the outfits of this ship and the Peacock, in preparing them at the navy-yard, Norfolk, for the service in which we are engaged, I omitted to mention the same to the Department, owing to the necessity of our sailing without delay or detention; but since our arrival at this port, the Peacock particularly has been found in such a condition, that it is with regret I consider it my duty to represent the same to you, and take leave to enclose herewith a report of their commander, by which it appears she was in a much worse condition on leaving the dock-yard at Norfolk, than had been anticipated; instead of being well prepared for the service required in the Exploring Expedition.

I have forwarded to you, through the navy-agent at New York, for your examination, a box containing an iron hoop, taken from one of the pumps of the Peacock, as a fair specimen of the little attention which had been bestowed upon her at the navy-yard in her repairs. I have to state also, that a few days after the ship left the navy-yard, her fore and cross-jack-yards were found so much decayed, that it was necessary to replace them by new ones, on representation of her commander.

I consider it my duty to state that we have found nearly all the men furnished us from the receiving-ship, Norfolk, by your order, unfit for

the duty required of them; and on sending some of them back, they refused to receive them; consequently I shall have to send them home, or transfer them to the squadron on the Brazil coast, if Commodore Nicolson will take them, and obtain others if possible.

We shall be put to much inconvenience and delay at Rio de Janeiro, where it will be necessary to repair and recalk the Peacock, as far as possible to enable her to perform the cruise required; this will be attended with much additional expense, and is another reason for making a full representation of the facts, to be made use of as the Department may see fit.

I have the honour to be, sir,
Most respectfully, &c.,
CHARLES WILKES.
Commanding Exploring Expedition.

To the HON. JAS. K. PAULDING,
Secretary of the Navy

U. S. Ship Peacock,
Madeira, September 18th, 1838.

SIR,—

In a verbal communication, a few days previous to leaving Hampton Roads, I stated to you that I could point out many things that ought to be done, or rather done over, on board this ship, particularly the calking about the water-ways, sides of the ship, deck, &c., and that I had no doubt the ship would make considerable water, when we got to sea; as the work enumerated would occupy some time, and to do it conveniently we ought to go back to the yard, it was determined at that interview (from the great desire of the Department, and in fact the whole country, that the Exploring Squadron should get to sea, as well as the injurious effects delay would have upon the officers and men) that the squadron should get off the moment sailing orders were received, and remedy as much as possible within our means, such defects as might thereafter show themselves in the course of our passage.

Coinciding most fully in opinion with yourself, on that occasion, as soon as I returned to the Peacock, I had an examination of our pump-gear, and found but one set of boxes in the two forward pumps, which, from their rusty and otherwise worn-out appearance, I was induced to believe had not been removed since her arrival in port. The pump-gear had not yet come on board; we immediately sent to the navy-yard for it; when it arrived, (the day before sailing,) the pumps were tried, and appeared to work well; we found, however, two of the pumps with half an inch less diameter or bore than the others; this I

consider a defect, for two reasons: first, the small ones not discharging as much water as the large; secondly, having to use pump-boxes of different sizes in the same ship, where from accident to one set, the other cannot be used to make up the deficiency. As the sequel proved, the ship leaked considerably the moment we got a breeze which drove us through the sea; not only through her water-ways, upper works, and decks, but through the eyes of her combings, I presume through the scarf in the stem,—at all events, running by buckets-full down the apron into the store-room, forcing such quantities of water on her berth-deck, that I found it necessary to scuttle it to carry the water off.

The chain-cables of the ship I rowsed out of the lockers at sea, examined the shackles, and found it necessary in two of the cables to have almost every shackle put in the forge. So completely had the bolts rusted in, that they could not be started until fire had done its work upon them, and even then some of them had to be cut entirely out. While thus making an overhaul below, I examined the pump-well, and to my utter surprise and astonishment, found all the iron bands on the two after pumps, below the berth-deck, in the state of the one I now send to you for inspection; and from the fact of one of them having entirely rusted off, and found lying in pieces at the bottom of the well-room, it may fairly be inferred they were not examined at all after the arrival of the ship at Norfolk. I had the two pumps, from which the bands had dropped off, well woulded at sea, and from the appearance of soft spots about them, am fearful when taken out, (which must be done at Rio,) we will find them rotten.

I should have recommended taking them out here, but in consequence of having to raise up a portion of the spar-deck for that purpose, think we may venture to delay it until our arrival at that port. I have also to state that the bibbs of both the fore and main-masts have started and canted three-quarters of an inch forward, and work considerably while at sea. This we shall remedy by raising our lower rigging, tops, and trestle-trees, and endeavour to get them back in their places, and secure them with extra bolts. I have stated but a few of many defects, and can only say that I have, during my service, assisted in the fitting out of many vessels, and regret, under all the circumstances of the case, to be compelled to add, that, taken as a whole, the Peacock has been fitted out, (so far as the navy-yard was concerned,) with less regard to safety and convenience, than any vessel I have ever had any thing to do with.

Respectfully, &c.,

(Signed) Wm. L. Hudson,

Commanding U. S. Ship Peacock

Charles Wilkes,

Commanding Exploring Expedition.

XVI.

METEOROLOGICAL OBSERVATIONS MADE ON BOARD THE UNITED STATES SHIP VINCENNES, UNDER THE EQUATOR.

NOVEMBER 6TH, 1838.

Mean Barometer,	29·99
Highest at 11 P. M.	30·04
Lowest at 3 P. M.	29·94
Mean Sympiesometer,	29·68
Highest at 11 P. M.	29·74
Lowest at 4 P. M.	29·62
Mean temperature of air,	75·37°
Mean temperature of water	76·10°

NOVEMBER 7TH.

HOUR.	BAROMETER.		SYMPIESOMETER.		REMARKS.	
	P. M.	A. M.	P. M.	A. M.		
1	29·98	29·98	29·66	29·68	Mean Barometer,	30·00
2	29·98	29·98	29·66	29·67	Highest at 9 A. M.	30·05
3	29·96	29·98	29·63	29·68	Lowest at 3 P. M.	29·96
4	29·97	29·98	29·63	29·68		
5	29·97	30·01	29·64	29·70	Mean Sympiesometer,	29·68
6	29·98	30·02	29·65	29·72	Highest at 8 A. M.	29·74
7	30·00	30·02	29·68	29·70	Lowest at 4 P. M.	29·68
8	30·02	30·03	29·68	29·74		
9	30·03	30·05	29·70	29·72	Mean Temp. of air,	76·20°
10	30·04	30·02	29·72	29·69	Mean Temp. of water,	76·18°
11	30·04	30·00	29·72	29·68		
12	29·98	29·99	29·68	29·66		

XVI.—Continued.

NOVEMBER 8TH.

HOUR.	BAROMETER.		SYMPIESOMETER.		REMARKS.
	P. M.	A. M.	P. M.	A. M.	
1	29·95	29·99	29·64	29·68	Mean Barometer, ... 29·95
2	29·94	29·98	29·63	29·65	Highest at 9 P. M. . . . . 30·04
3	29·93	29·98	29·60	29·68	Lowest at 3 P. M. . . . . 29·93
4	29·96	29·98	29·62	29·68	
5	30·00	30·00	29·64	29·70	Mean Sympiesometer, . . . 29·67
6	30·00	30·00	29·66	29·72	Highest at 9 P. M. . . . . 29·74
7	30·03	29·99	29·70	29·71	Lowest at 3 P. M. . . . . 29·60
8	30·04	30·00	29·72	29·70	
9	30·04	30·01	29·74	29·73	Mean Temp. of air, ... 75·18°
10	30·04	30·02	29·74	29·72	Mean Temp. of water, . . . 76·26°
11	30·02	30·00	29·72	29·70	
12	30·00	29·98	29·70	29·68	

NOVEMBER 9TH.

1	29·98	30·00	29·62	29·70	Mean Barometer, ... 29·98
2	29·97	29·98	29·65	29·70	Highest at 10 P. M. . . . . 30·05
3		29·94		29·68	Lowest at 3 A. M. . . . . 29·94
4		29·95		29·68	
5	29·95	29·95	29·63	29·68	Mean Sympiesometer, . . . 29·68
6	29·97	29·98	29·64	29·68	Highest at 9 P. M. . . . . 29·74
7	30·00	30·00	29·68	29·70	Lowest at 1 A. M. . . . . 29·62
8	30.01	30·01	29·74	29·72	
9	30·02	30·02	29·74	29·70	Mean Temp. of air, ... 75·87°
10	30·05	30·02	29·74	29·69	Mean Temp. of water, . . . 76·60°
11	30·05	30·00	29·74	29·68	
12	30·02	29·98	29·72	29·64	

TABLE OF METEOROLOGICAL OBSERVATIONS AT RIO JANEIRO, BY MR. JOHN GARDNER.

MONTHS.	HIGHEST RANGE OF THERMOM.					LOWEST RANGE OF THERMOM.					MEAN TEMPERATURE.					FAIR DAYS.					CLOUDY DA			
	1833.	1834.	1835.	1836.	1837.	1833.	1834.	1835.	1836.	1837.	1833.	1834.	1835.	1836.	1837.	1833.	1834.	1835.	1836.	1837.	1833.	1834.	1835.	
JANUARY.	92·5°	89°	91°	90°	91°	74°	80°	74°	76°	73°	80·75°	78·33°	76°	76·66°	82°	12	22	21	26	24	7	5	4	
FEBRUARY.	93	90	91	90	85	79	79	76	78	76	74·33	77·5	71	73·06	79·8	20	24	25	23	18	3	3	0	
MARCH.	90	88	85	90	86	76	77	74	76	73	73·5	70	71·4	70·87	78·6	23	20	18	18	23	3	6	1	
APRIL.	88	84	80	82	79	76	72	72	68	69	72·25	73·5	74	74·29	75·5	25	15	15	25	12	5	6	3	
MAY.	78	82	78	73	80	71	72	68	67	68	76	72·66	75	75·77	73·5	24	24	16	22	23	2	4	5	
JUNE.	77	75	75	78	74	69	66	68	66	65	78·33	76·66	72·3	72·8	68	28	15	20	18	24	2	4	5	
JULY.	76	77	77	77	76	67	69	68	66	64	79	75·25	76	75	70	26	21	25	25	21	4	5	3	
AUGUST.	81	79	79	82	80	71	66	64	70	67	83	76	77·75	76·3	72·5	23	18	19	26	25	5	4	6	
SEPTEMBER.	84	84	79	81	85	73	72	66	65	67	84	80·75	78·75	79·9	74	27	20	15	20	15	1	7	8	
OCTOBER.	86	84	80	83	83	75	68	69	66	73	82·5	83·5	82	83·5	77	25	16	19	21	27	4	5	8	
NOVEMBER.	89	83	84	83	82	76	71	73	72	72	87	84	84·66	85·2	77	24	18	19	18	15	2	5	6	
DECEMBER.	91	90	88	86	85	80	72	72	76	73	83·5	81·25	78·5	82·75	78·35	19	25	20	22	16	3	2	3	

1833.

Mean of the highest range of Thermometer at noon, for 12 months, ... 85·5°
Mean of the lowest range of Thermometer at noon, for 12 months, ... 74
Mean temp. for 12 months at noon, ... 79·5
Fair days in 12 months, 276
Cloudy do. do. 41 } 365
Rainy do. do. 48

1834.

Mean of the highest range of Thermometer at noon, for 12 months, ... 83·75°
Mean of the lowest range of Thermometer at noon, for 12 months, ... 72
Mean temp. for 12 months, at noon, ... 77·5
Fair days in 12 months, 238
Cloudy do. do. 56 } 365
Rainy do. do. 71

1835.

Mean of the highest range of Thermometer at noon, for 12 months, ... 82·25°
Mean of the lowest range of Thermometer at noon, for 12 months, ... 70·33
Mean temp. for 12 months, at noon, ... 76·25
Fair days in 12 months, 232
Cloudy do. do. 52 } 365
Rainy do. do. 81

1836.

Mean of the highest range of Thermometer at noon, for 12 months, ... 83°
Mean of the lowest range of Thermometer at noon, for 12 months, ... 70
Mean temp. for 12 months, at noon, ... 77·13
Fair days in 12 months, 264
Cloudy do. do. 49 } 366
Rainy do. do. 53

MONTHS.	HIGHEST RANGE OF THERMOM.				LOWEST RANGE OF THERMOM.				MEAN TEMPERATURE.				FAIR DAYS.				CL	
	1838.	1839.	1840.	1841.	1838.	1839.	1840.	1841.	1838.	1839.	1840.	1841.	1838.	1839.	1840.	1841.	1838.	18
JANUARY.	86°	87°	88°	87°	75°	74°	75°	75°	82·12°	81·71°	82·64°	83·35°	12	16	20	16	10	
FEBRUARY.	87	88	88	84	76	77	82	77	83·1	82·7	84·72	81·32	17	16	26	16	6	
MARCH.	86	83	85	87	74	75	75	82	78·9	80·25	78·77	84·30	17	13	13	30	7	
APRIL.	82	83	80	85	72	73	75	78	77·13	77·4	77·93	80·5	18	20	24	17	7	
MAY.	76	79	80	78	68	71	70	71	71·17	74·51	76·22	74·84	22	18	18	17	5	
JUNE.	76	76	76	75	70	68	68	69	72·36	71·44	72·37	71·26	25	25	21	25	2	
JULY.	75	75	74	74	69	65	68	68	72·03	69·61	71·48	71·29	22	23	19	17	4	
AUGUST.	75	76	75	77	66	65	65	66	70·87	72·12	71·38	72·09	20	24	19	25	4	
SEPTEMBER.	78	76	82	77	70	68	73	68	75·36	72·77	76·16	74·47	25	15	19	19	3	
OCTOBER.	83	82	86	84	72	69	73	72	77·5	74·03	79·77	75·67	18	15	20	12	8	
NOVEMBER.	86	86	84	84	72	74	76	73	77·4	75·93	78·76	77·26	14	17	13	8	9	
DECEMBER.	90	88	87	84	75	74	79	72	82·3	80·58	82·80	77·24	18	17	19	8	5	

1838.

Mean of the highest range of Thermometer at noon, for 12 months, . . . 81·66°
Mean of the lowest range of Thermometer at noon, for 12 months, . . . 71·53
Mean temp. for 12 months, at noon, . . 76·53
Fair days in 12 months, 228
Cloudy do. do. 70 } 365
Rainy do. do. 67

1839.

Mean of the highest range of Thermometer at noon, for 12 months, . . . 81·58°
Mean of the lowest range of Thermometer at noon, for 12 months, . . . 71·08
Mean temp. for 12 months, at noon, . 76·03
Fair days in 12 months, 219
Cloudy do. do. 67 } 365
Rainy do. do. 79

1840.

Mean of the highest range of Thermometer at noon, for 12 months, . . . 82·08°
Mean of the lowest range of Thermometer at noon, for 12 months, . . . 73·25
Mean temp. for 12 months, at noon, . 77·75
Fair days in 12 months, 231
Cloudy do. do. 67 } 366
Rainy do. do. 68

Mean of
meter
Mean of
meter
Mean ter
Fair day
Cloudy
Rainy

Mean average of highest range of Therm. from 1833 to '41, 9 years, at noon, 82·059°

Mean average of lowest range of Therm. from 1833 to '41, 9 years at noon, 71·064°

Mean temp. at noon, from 1833 to '41, 9 years, 77·01°

Average fair days, from 1833 to '41, 9 years, 237

Cloudy days, to '41, 9 years

XVIII.

MEMORANDUM OF PASSAGES FROM THE UNITED STATES TO RIO DE JANEIRO FOR EIGHT YEARS.

YEARS.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMB.		OCTOBER.		NOVEMB.		DECEMB.		MONTHLY AVERAGE.		REMARKS.
	NO. VESSELS.	AVERAGE PASSAGE.	VESSELS.	PASSAGE.	VESSELS.	PASSAGE.	VESSELS.	PASSAGE.	VESSELS.	PASSAGE.	VESSELS.	PASSAGE.	VESSELS.	PASSAGE.	VESSELS	PASSAGE.	VESSELS.	PASSAGE.	VESSELS.	PASSAGE.	VESSELS.	PASSAGE.	VESSELS.	PASSAGE.	VESSELS.	PASSAGE.	
1834	13	55	4	60	0	0	2	53	3	49	10	49	8	50	5	62	3	56	9	56	6	59	5	60	6	55	
1835	17	50	2	52	4	48	7	55	9	51	10	52	6	46	14	60	3	50	9	53	11	62	6	49	8	52	SHORTEST PASSAGE,
1836	6	43	4	57	5	48	8	45	10	51	8	52	9	51	8	56	6	52	3	61	6	55	9	46	7	51	29 DAYS.
1837	6	40	6	45	3	48	5	48	4	47	5	62	4	50	1	50	1	62	4	55	2	55	9	52	4	51	
1838	11	47	8	49	5	50	2	59	6	51	7	51	9	54	7	59	8	58	11	58	11	62	7	50	8	55	
1839	7	43	10	51	6	50	7	51	5	52	10	48	12	59	10	58	6	59	12	58	3	64	5	52	8	54	
1840	6	51	10	49	4	52	9	51	5	50	5	48	9	61	8	60	8	63	7	62	14	64	13	51	8	55	LONGEST PASSAGE,
1841	9	48	20	53	9	45	6	50	9	55	8	58	9	62	7	61	12	63	10	55	11	58	11	49	10	55	90 DAYS.
AVERAGE FOR 8 YRS.	9	47	8	52	4	49	6	51	6	51	8	52	8	54	7	58	6	58	8	57	8	60	8	51	7	53½	

XVIII.—Continued.

AMERICAN ARRIVALS AT RIO DE JANEIRO.

	1839.	1840.	1841.
From the United States, -	92	97	119
From Europe, - - - -	31	27	39
From Whaling, - - -	26	13	20
	149	137	178
Vessels of War, - - -	10	14	18
Total, - - - -	159	151	196

XIX.

TO THE OFFICERS OF THE EXPLORING EXPEDITION.

The undersigned, in calling the attention of the officers of the squadron under his command, to their personal appearance, would observe, that in his opinion the example of some of them in this respect is not such as should indicate to the crews of the different vessels composing the squadron, the necessity which exists of the greatest attention being paid to their personal appearance and cleanliness, in conformity to the internal rules and regulations of the squadron.

He has not been aware until recently of the extent to which the wearing of mustachios has been carried: they in most cases give a notoriety and appearance of want of attention to neatness, &c., which renders it impossible for the officer, with any degree of consistency, to carry the inspection of their men or divisions to that extent, which he considers absolutely necessary for the health and comfort of all.

He believes it only necessary to appeal to the good sense of the officers in order to remedy their appearance, and feels assured that upon reflection they will see the like necessity and importance of preserving, in the first national expedition, the usual appearance, habits and customs of their own country.

Very respectfully,

Charles Wilkes,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
At Sea, October 8th, 1838.

U. S. Ship Vincennes,
At Sea, November 1st, 1838.

Sir,—

As some misapprehension may exist in relation to the use for which the reading-room, or forward cabin, is intended, I think it as well to briefly state my views respecting its uses, in which I have no doubt all will see the propriety of concurring.

I view it then in the same light as the ship's library, or a place where every one may usefully employ himself, free from the usual interruption of the ship's duty, and not subject to other practices, which would cause interruption in the use of books.

The accommodations, though not large, will with due respect and consideration for each other's views, be found to be ample, and will naturally prevent any one from appropriating exclusively its small conveniences to himself; or using its table for writing (intended for books and the facility of reference to them), as there no doubt exists sufficient room in the several apartments appropriated to the different officers for that purpose, without incommoding any one.

You will therefore keep its use confined to these purposes, and not permit the issue of slops, &c., to take place in it.

Respectfully,
Charles Wilkes,
Commanding Exploring Expedition.

Lieut. Thomas T. Craven,
U. S. Ship Vincennes.

ORDERS FOR THE VINCENNES.

The following arrangements in regard to the scientific duties of the officers of this ship, will be adopted when in port.

Lieutenant Craven will aid the scientific corps as Assistant Naturalist, when his duties on board can be dispensed with.

Lieutenant Carr will be engaged with me in scientific duty at the observatory.

Lieutenant Johnson will perform the duty of first-lieutenant during the absence of Lieutenant Craven, and will be excused from night watch when so engaged. The officers will be divided into watches for duty on board ship, at the observatory, and elsewhere, as follows:

1st watch, Lieutenant Johnson and Passed Midshipman Totten.

2d watch, Lieutenant Alden and Passed Midshipman Reynolds.

3d watch, Lieutenant Maury and Passed Midshipman May.

4th watch, Acting-Master North and Passed Midshipman Sandford.

A relief watch will at all times be on board ship for such duty as may be required.

Mr. Elliott, chaplain, supernumerary for such duty as may be required.

Midshipmen Clark and Elliott, will be excused from watch for boats and other duty.

Acting-Surgeon Gilchrist will be associated with Mr. Rich, Botanist of the Expedition.

Assistant-Surgeon Fox, as assistant to T. R. Peale, Naturalist, and Mr. Dana, Mineralogist.

Assistant-Surgeon Whittle as assistant to Dr. Pickering.

The officers attached to the tenders Sea-Gull and Flying-Fish, will be associated in scientific duties with the first and fourth watches of the Vincennes and Peacock.

The arrangements heretofore made in regard to the duties of the medical officers will be complied with until further orders, which will enable them to devote much of their time to the scientific duties; and it is desirable that they should receive from the scientific gentlemen with whom they are associated, every facility which can be afforded them, and every opportunity of being useful.

As the object of this association of duty is to extend as far as possible the operations of the Expedition, it is earnestly requested that the gentlemen composing the scientific corps will on all occasions avail themselves of the services of those officers who by this order have been associated with them, and of all others who may (when their duties and time will permit) be desirous of aiding or advancing the interests of the Expedition, by making collections, drawings, &c., and that the utmost harmony, good feeling, and concert of action may exist at all times, as nothing will so much tend to promote the usefulness, and be the means of extending the objects of the Expedition.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
November 20th, 1838.

ORDERS FOR THE PEACOCK.

THE officers to be divided into watches, the same as the Vincennes, and a relief watch to be always on board.

Midshipmen Henry and Hudson excused from watch for boat duty, &c.

Dr. Sickles associated with Mr. Couthouy for scientific duty. Dr. Holmes also to aid in scientific duty.

The orders in regard to the medical officers the same as the Vincennes.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
At Sea, November 21st, 1838.

ORDERS FOR THE PORPOISE.

THE following arrangements in regard to the scientific duties of the officers of the Porpoise when in port, will be adopted.

The officers will be divided into watches, to perform duty on board, at the observatory, and elsewhere, as follows:

1st watch, Lieutenant Claiborne and Passed Midshipman Blunt.

2d watch, Lieutenant Hartstein and Acting Midshipman Baldwin.

3d watch, Lieutenant Dale and Passed Midshipman Colvocoressis.

Lieutenant Dale in sketching when his other duties will permit.

Dr. Guillou on duty as Assistant Naturalist, and will make himself useful in all the departments.

The order for medical officers the same as the Vincennes.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
At Sea, November 21st, 1838.

ORDERS FOR THE RELIEF.

THE watch officers to be divided the same as on board the Porpoise, as follows:

1st watch, Lieutenant Pinkney and Passed Midshipman Davis.

2d watch, Lieutenant Case and Passed Midshipman Cummings.

3d watch, Lieutenant Underwood and Passed Midshipman Sinclair.

Lieutenant Case, when his other duties will permit, will assist in the naturalist department.

Dr. Palmer will be attached to the scientific department, as assistant to Dr. Pickering and Mr. Couthouy, Naturalist.

Midshipman Blair will be excused from watch for boat duty.

Lieutenant Underwood will be employed in sketching, &c.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
At Sea, November 21st, 1838.

XX.

U. S. Ship Vincennes,
Rio de Janeiro, December 15th, 1838.

Sir,—

You will proceed and make a survey of a shoal said to exist off Cape St. Thomas, about sixty miles north of Cape Frio, with the Peacock, Porpoise,* Sea-Gull, and Flying-Fish, which are placed under your command for the duty.

The shoal is supposed to be about twenty miles east-half-north from Cape St. Thomas.

In surveying it, as far as I am able to judge of its locality, I would recommend the following mode to be pursued, viz.:

On your arrival at or near its supposed locality, anchor your four vessels at convenient distances from each other, within a suitable distance for admeasurement by sound. Here ascertain your latitude and longitude accurately, measure your distance between all the vessels by sound, firing guns in succession, noting the elapse of time between the flash and report; then, or before, measure the azimuth between each vessel and the sun, and proceed with your boats to sound, radiating from each vessel on the several points of bearings: the position of your boats may be accurately ascertained by the angles on any three of the vessels, and the soundings obtained can at once be inserted on the skeleton chart prepared for the occasion.

You will, while at anchor, heave the current log every hour, and notice the direction by the head of your ship. After you have satisfactorily explored the ground that your vessel may have anchored on, you will then, in all probability, know the direction in which the shoalest water lies from you, and by shifting the anchorage of each vessel in succession toward that direction, you will occupy new ground, when the same operation of measuring bases by sound, and taking azimuths, will be gone through with, and then you may approach the position without any danger, as your chart will be constructed as you proceed.

Lieutenant Johnson has been ordered to the Porpoise to superintend her movements in regard to this survey, and Lieutenant Alden to your ship, in whose information, as respects the above mode of proceeding, you may rely.

Mr. Knox of the Flying-Fish, is also apt at this work. I have

* The Porpoise was not on this duty; these orders were countermanded, as she could not be prepared for sea in season.

ordered Mr. May to assist him in this cruise, and Mr. Eld, of your ship, to assist in the duties on board the Sea-Gull.

After you have obtained the necessary information in regard to this shoal, (should you be so fortunate as to find it,) you will return to Cape Frio, and from thence measure the distance from this harbour by sound.

The most efficient mode of doing this, I conceive as follows, viz. After getting the light in sight, anchor the three vessels so as to form a triangle, and take their azimuthal bearings from the sun, measuring by sound the distance between the vessels, which will give you the bases of the triangle; then measure the angles from on board the vessels, with the light-house, and this will give you data to calculate its distance and bearing; thence proceed west, keeping the vessels in range, and as soon as you get their distance and bearing, change their positions alternately.

Very respectfully,

CHARLES WILKES,
Commanding Exploring Expedition.

CAPTAIN WILLIAM L. HUDSON,
Commanding U. S. Ship Peacock.

XXI.

POPULATION OF BRAZIL,

Estimated by the numbers of houses furnished by the returns of Elections for Deputies in 1833, to the National Legislature, calculating each habitation as containing five free people, and the slaves as being two-fifths of the whole population.

PROVINCES.	NO. OF HOUSES.	INHABITANTS.
PARA	24,500	102,500
MARANHAO	30,600	153,000
PIANHY	11,300	56,500
CEARA	35,900	179,500
RIO GRANDE DEL NORTE	12,400	62,000
PARAHIBA	24,700	123,500
PERNAMBUCO	59,900	299,500
ALAGOAS	33,300	166,500
SERGISSE	20,700	103,500
BAHIA	87,600	438,000
CUIABA	5,600	28,000
GOYAS, SLAVES, (17,375)	13,900	69,500
MINAS GERAES, (24,600)	120,800	604,000
ESPIRITO SANTO	7,700	38,500
RIO DE JANEIRO, (117,600)	58,800	294,000
ST PAULO, (94,166)	56,100	282,500
ST. CATHERINE'S	9,800	47,000
RIO GRANDE DO SOL, (20,500)	16,400	82,000

XXII.

STATEMENT OF THE EXPORTS OF THE PRINCIPAL PRODUCTS OF BRAZIL, DURING THE YEAR 1838, SHOWING THE QUANTITY THAT WAS EXPORTED TO FOREIGN PORTS, AND THE FLAG UNDER WHICH IT WAS SHIPPED.

NATIONS.	VESSELS.	TONNAGE.	COFFEE.		SUGAR.			HIDES.	HORNS.	SOLE LEATHER, HALF HIDES.	RICE IN BAGS.	SMOKED BEEF IN ROUNDS.	BRANDY IN PIPES.	TAPIOCA IN BARRELS.	JACARANDA WOOD IN PLANKS.	FLOUR IN BAGS.	DRIED BEEF PER 100 LBS.
			BAGS.	BARRELS.	BOXES.	BARRELS.	BAGS.										
AMERICAN.	91	21,762	266,846	5	552	6	—	2,942	—	—	—	—	—	40	—	—	—
ARGENTINE REP.	10	1,080	53	—	22	645	323	—	—	—	732	1,933	230	—	—	100	—
AUSTRIAN.	4	1,260	734	—	796	502	—	—	—	2,142	—	1,817	—	—	—	—	—
BELGIUM.	5	1,215	14,455	—	—	—	—	7,304	38,994	—	—	—	—	14	—	—	—
BRAZIL.	34	6,565	1,340	67	468	1,744	66	21,451	3,674	858	1,934	3,870	1,278	—	—	5,148	382
BREMEN.	4	710	7,457	—	—	81	—	—	1,656	150	—	210	—	—	—	—	—
DENMARK.	30	6,272	74,663	—	2,124	145	—	4,370	37,557	350	—	—	—	—	—	—	—
FRANCE.	20	4,361	29,332	192	132	33	134	32,407	6,977	—	—	—	—	93	2,367	—	—
HAMBURG.	28	6,538	70,123	118	2,444	542	—	17,952	116,510	1,900	—	—	—	—	33	—	—
SPAIN.	10	1,052	5,206	850	—	571	—	3,294	11,168	—	277	—	160	—	—	50	—
HOLLAND.	1	128	111	—	124	—	—	—	—	—	—	—	—	—	—	—	—
ENGLAND.	108	20,069	227,075	917	4,844	1,644	355	25,777	89,316	2,020	135	484	—	306	2,596	300	—
KNIPHAUSEN.	1	178	2,909	—	—	—	—	—	1,218	—	—	—	—	—	—	—	—
NAPLES.	1	260	562	2	166	2	—	250	—	—	—	—	—	—	—	—	—
BANDA ORIENTAL.	31	3,499	35	—	134	2,200	8	—	—	—	2,684	10,606	663	—	—	3,169	—
PORTUGAL.	102	22,032	10,455	69	2,250	4,842	260	61,522	50,080	—	7,779	1,858	2,724	55	1,086	5,067	1,014
PRUSSIA.	1	350	6,842	—	97	—	—	1,803	13,507	—	—	—	—	—	—	—	—
SARDINIA.	24	4,146	9,680	4	706	1,283	3,278	7,855	20,635	600	1,196	3,334	417	—	—	1,284	—
SWEDEN.	20	5,099	49,071	954	2,567	230	—	5,283	14,000	310	—	7	—	15	—	—	—
TUSCANY.	2	210	1,524	—	—	—	—	500	500	—	—	—	—	—	—	—	—
TOTAL.	527	106,786	778,473	3,178	17,426	14,470	4,424	192,710	405,792	8,330	14,737	24,119	5,472	523	6,082	15,118	1,396

XXIII.

RESULTS OF THE MEASUREMENT OF A BASE LINE BY SOUND, BETWEEN CAPE FRIO LIGHT-HOUSE AND EN

POSITION OF VESSELS.	ASTRONOMICAL BEARING.	DISTANCES.	DIFF. OF LAT.	DIFF. OF LON.	POSITION OF VESSELS.	ASTRONOMI BEARING
From Light-house to Flying-Fish's 1st,	S. 85° 07′ W.	19514·40 feet.	1661·2 S.	20649·0 W.	From Peacock's 6th to Flying-Fish's 6th,	S. 87° 04′
" Flying-Fish's 1st to Sea-Gull's 1st,	87 45	7009·34	275·2	7608·0	" Flying-Fish's 6th to Peacock's 7th,	87 12
" Sea-Gull's 1st to Peacock's 2d,	85 31	15475·17	1209·7	16758·0	" *Peacock's 7th to Sea-Gull's 7th,	87 44
" Peacock's 2d to Flying-Fish's 2d,	87 46	9524·40	371·1	10337·0	" Sea-Gull's 7th to Flying-Fish's 7th,	89 54
" Flying-Fish's 2d to Sea-Gull's 2d,	85 16	12778·39	1054·4	13835·0	" Flying-Fish's 7th to Sea-Gull's 8th,	89 46
" Sea-Gull's 2d to Peacock's 3d,	85 52	13426·98	967·7	14546·0	" Sea-Gull's 8th to Peacock's 8th,	N. 89 46
" Peacock's 3d to Flying-Fish's 3d,	85 27	10525·39	834·9	11397·0	" Peacock's 8th to Flying-Fish's 8th,	89 58
" Flying-Fish's 3d to Sea-Gull's 3d,	86 04	13381·47	918·1	14501·0	" Flying-Fish's 8th to Sea-Gull's 9th,	89 52
" Sea-Gull's 3d to Peacock's 4th,	86 13	20845·96	1375·5	22594·0	" Sea-Gull's 9th to Peacock's 9th,	89 52
" Peacock's 4th to Flying-Fish's 4th,	85 12	12821·91	1073·0	13879·0	" Peacock's 9th to Flying-Fish's 9th,	25 00
" Flying-Fish's 4th to Sea-Gull's 4th,	84 43	10468·50	964·9	11322·0	" Flying-Fish's 9th to Sea-Gull's 10th,	26 00
" Sea-Gull's 4th to Peacock's 5th,	26 33	16055·49	966·2	17410·0	" Sea-Gull's 10th to Peacock's 10th,	25 05
" Peacock's 5th to Flying-Fish's 5th,	85 48	12801·15	937·5	13867·0	" Peacock's 10th to Flying-Fish's 10th	24 45
" Flying-Fish's 5th to Sea-Gull's 5th,	85 10	8056·19	678·8	8720·0	" Flying-Fish's 10th to Sea-Gull's 11th	24 05
" Sea-Gull's 5th to Peacock's 6th,	84 41	18524·69	1716·5	20048·0	" Sea-Gull's 11th to Enxados Island,	S. 84 34

* The Peacock here changed to Sea-Gull's position.

Meridian Distances between Cape Frio Light-house and Enxados Island.

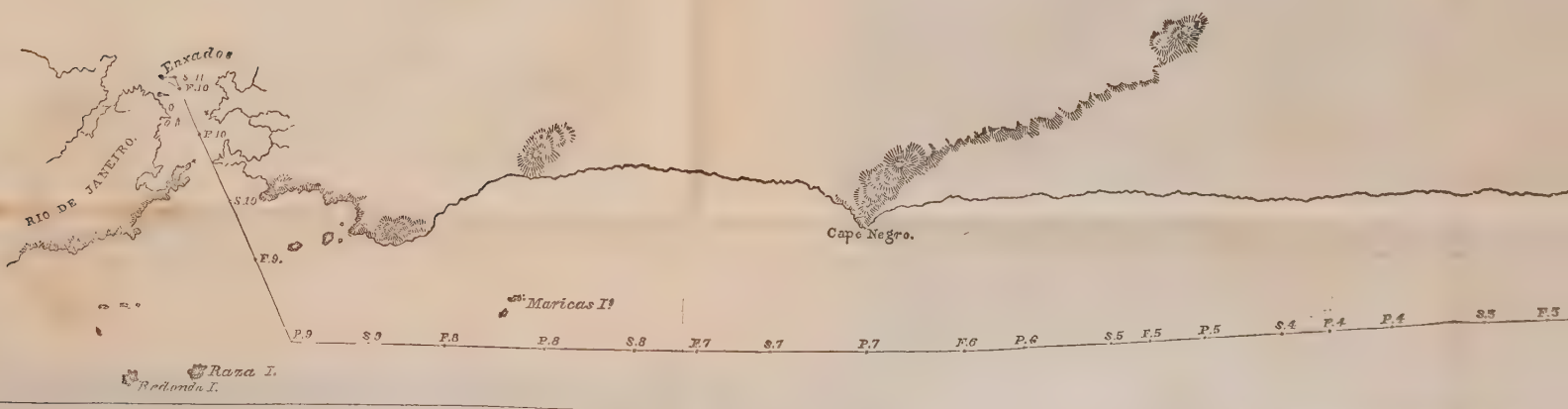
By Sound, . . . 1° 08′ 52″ 8‴

By Chronometer, . 1 09 48 0

Longitude of Enxados Island, . .

Difference of Longitude, .

Longitude of Cape Frio Light-



XXIV.

SAILING INSTRUCTIONS FOR THE RELIEF, NOT TO BE OPENED UNTIL AT SEA.

U. S. Ship Vincennes,
Rio de Janeiro, December 18th, 1838.

Sir,—

You will sail from this harbour, and follow strictly the following instructions, which are intended for your government.

1st. You will proceed with all possible despatch with the Relief, under your command, to Orange Harbour, and there await my arrival.

2d. Orange Harbour is situated in latitude 55° 30′ 50″ S., and longitude 68° 00′ 23″ W.

3d. You will pursue such a course as will take you on soundings about latitude 45° S., and continue on them all the way to Terra del Fuego, as near as you can to the land, westerly winds prevailing most of the way.

4th. You will pass through the Straits of Le Maire, and double close around the southeast point of Terra del Fuego, keeping in with the land until you are up with the Hermit Islands; you will then have your port open to you clear of hidden dangers.

5th. A plan of Orange Harbour is among your Book of Charts, No. 1079.

6th. On your arrival there, you will set up tide-staves, similar to those now in use by us on the Island of Enxados, and keep an hourly register of the rise and fall.

7th. At Orange Harbour, you will employ your crew in cutting fifty cords of the best wood, and deposit the same at the most convenient landings, for the use of the squadron on its arrival.

8th. You will fill up with water, and have your stores and provisions ready for any delivery.

9th. Your anchorage will be within Burnt Island, where you will establish the light sent you, which you will place in charge of some careful person, to be kept lighted during the night. In the event of its failing, you will keep a bonfire on shore, as a night-signal for the squadron.

10th. You will carefully preserve all the soundings brought up by your deep-sea lead, in papers, with the positions where they were had.

11th. On your route you will make repeated trials of the current, and while on soundings you will anchor your boat with the deep-sea

lead, making use of the current-log. Your acting-master has been shown the one in use on board this ship.

12th. You will expose two thermometers, one having its bulb covered with black wool, daily to the influence of the sun, and note the difference in your journal; also that which is shown in the shade; and you will continue all observations as heretofore.

13th. It is believed that the Relief will not require any repairs; should, however, any be necessary, you will complete them at once.

14th. You will avoid being blown off to the eastward by all the means in your power; running with the coast, and anchoring during the continuance of westerly gales under the land, is recommended. I am not aware that you have any dangers to fear, except kelp, which you may run boldly towards, but avoid entering.

15th. You will afford Mr. Rich, the Botanist, every facility in collecting specimens, &c., and, if possible, seek out places where a quantity of wild celery-grass may be collected for the crews on our arrival.

16th. You will issue to such of the crew as may require the warm articles of clothing supplied for the Exploring Expedition, charging them at the usual slop prices, which will be remitted at the end of the cruise, on the good behaviour of the men.

17th. You will give particular attention to the health and comfort of the officers and crew.

Wishing you a safe and speedy passage to your port of destination,

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

LIEUT. COM. A. K. LONG,
U. S. Ship Relief.

U. S. Ship Vincennes,
Off Rio de Janeiro, Jan. 5th, 1839.

SIR,—

In the event of our separating, which, however, you will avoid by all possible exertions, you will proceed with all despatch to Orange Harbour, which is situated in latitude 55° 30′ 50″ S., longitude 68° 00′ 23″ W., taking such a course as will put you on soundings in about latitude 45° S.; continue on them all the way to Terra del Fuego, keeping close in with the land, as westerly gales prevail.

You will pass through the Straits of Le Maire, and double close round the southeast point of Terra del Fuego, until you are up with the Hermit Islands; you will then have your port open to you, clear of hidden dangers.

You will avoid being blown off to the eastward by all the means in your power, running in with the coast, and anchoring during the westerly gales. I am not aware that you have any dangers to fear except kelp, which you may run boldly for, but avoid entering.

On your arrival at Orange Harbour, you will find me or instructions, or you will await my arrival there.

You will issue to such of the crew as require them, the articles of warm clothing supplied for the Exploring Expedition, charging them at the usual slop prices, to be remitted them at the end of the cruise, on their good behaviour.

You will give particular attention to the cleanliness of your ship, and the health of the officers and crew.

A chart of Orange Harbour will be found in your Book of Charts, No. 1079.

Lieutenant-Commandant Long, has been directed to keep the light burning during the night, on Burnt Island, as a signal to the squadron.

I send you herewith the rates of your chronometers.

Very respectfully,

CHARLES WILKES,
Commanding Exploring Expedition.

To CAPTAIN WILLIAM L. HUDSON,
Peacock.

LIEUTENANT-COMMANDANT C. RINGGOLD,
Porpoise.

PASSED MIDSHIPMAN J. W. E. REID,
Sea-Gull.

PASSED MIDSHIPMAN S. R. KNOX,
Flying-Fish.

GENERAL ORDERS.

As difficulties frequently occur in regard to the dates of the log-books and journals of the squadron under my command, owing to the difference between civil and nautical time; hereafter, all the log-books and journals will be kept in civil time, commencing at twelve o'clock this day, being the meridian of the 20th of February, 1839.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
Orange Harbour, Feb. 20th, 1839.

XXV.

U. S. Ship Vincennes,
Orange Harbour, Terra del Fuego,
February 22d, 1839.

Sir,—

Although I am aware of the lateness of the season, and the risk to be incurred in attempting to make any explorations within the Antarctic Circle; yet I am of the opinion that there are many advantages to be derived from it, that will prove of incalculable benefit in any future attempts we may hereafter make at the proper season.

You will, therefore, with the Peacock and tender Flying-Fish, make the attempt to carry out the following instructions.

1st. On sailing from this anchorage, you will proceed as far as the Ne Plus Ultra of Captain Cook, in longitude 105° W., and from thence you will extend your researches as far to the southward and eastward as you can reach, without rendering yourself liable to be closed in by the ice.

2d. You will carefully note your daily positions on the skeleton chart herewith, and trace upon it, by astronomical and tangent observations, (not by compass,) all the ice you may fall in with during the cruise, whether island or field-ice.

3d. You will navigate to the southward, and eastward until you reach the western side of Palmer's or Graham's Land.

4th. It is believed that the latter part of the summer will afford you an opportunity of penetrating here farther south than has yet been done, and possibly meet an extension of Palmer's Land, more to the westward: if you should succeed, you will trace it to the eastward, and return by the southern and eastern side of it, to this anchorage, thus circumnavigating this land, unless you should receive further information from me.

5th. Herewith you will receive a dipping and intensity needle, with which you will make observations on any floe of ice that may be accessible.

6th. In your progress to the eastward from Cook's Ne Plus Ultra, 105° W., you will endeavour to get more and more to the southward, and to pass to the southward of the two small islands called Peter I. and Alexander, (the farthest land south discovered by the Russians in 1821,) and then fall in with what Briscoe denominated Graham's or Palmer's Land, (its proper American name.) I am of the opinion that it extends much farther to the southward and westward than where Briscoe saw the Adelaide Mountains, and that the land stretches or

trends to the west. This will be a very important discovery, and the lateness of the season is very advantageous for the exploration, if the summer should have proved an open one. My reason for believing in the extension of this land is, that such large quantities of ice-islands, which are frequently drifted to the north and west of Cape Horn, must have some land to form on, and we are aware that all the ice formed about the South Shetlands goes to the eastward.

7th. You must endeavour to reach the southward of Peter I. and Alexander I. Islands, or south of the Russian track.

8th. You will fill up the skeleton chart as you progress, and treat the main ice and ice-islands as if they were land, by inserting them on it, which will be an important addition to our knowledge, if we only obtain the line of ice in those seas; it does not appear ever to have been done by southern navigators accurately; had it been so, our task would have been more easy.

9th. I should think the winds from the west to the east will be so as to enable you to choose positions to shield your ship under the lee of the icy shore (if I may be allowed the expression).

10th. In the event of your reaching the main land, or a channel leading to it, if one offers, you will despatch the Flying-Fish, with such officers as you may think fit, to make the recognizance of it, if time should not allow a full survey.

11th. It is desirable that the extent and circumference of any islands which you may fall in with be ascertained, with their general character and productions, if any; specimens of rocks and sketches of their stratification will, if possible be taken. The islands of ice frequently show appearances of stratifications, with earth and rocks attached to them. Any thing gained from them will be interesting and valuable, with a particular notice whether the ice had been much worn away under them.

12th. The aurora australis has not been often seen; it is said to have been seen by Captain Cook near his Ne Plus Ultra, where you will commence. You will notice the extent and height of the ice, &c., and sketch, if possible, any remarkable refraction, with a description which will render it clear.

13th. You will note the observations of the thermometer in the sun and shade; also the temperature of the sea at such depths as you may judge best, with the sounding apparatus sent you.

14th. After having run to Palmer's Land, and not finding an opening or land, you will return to this harbour direct, where you will find this ship; and you will despatch the Flying-Fish to the harbour of Deception Island for information from me, which will, if possible, be left in a

bottle, enclosed in a heap of stones (a sailor's grave), on the right-hand side of that harbour, the entrance being at the east; and you will direct the officer in charge of the Flying-Fish to remain there, if he should hear nothing of me, as long as possible, even until the 1st of May, when she will proceed with all despatch to this port.

15th. Should you be shut up or detained by ice, which of course you will avoid by all possible means, you will, if possible, communicate to me at Deception Island, as in case you are out of time, you may rely on my sending there to hear from you, and afford any aid, as soon as the season will permit, to which place your boats or the tender can be navigated. It is my present intention, after surveying the southeast shore of Palmer's Land, to touch at Deception Island on my return north, and obtain or leave information as to our progress, in a bottle, as above described.

16th. You will, of course, give the most particular attention to the health and comfort of the officers and crews of your command, and the most economical expenditure of stores and provisions,—of which you have as much as you can stow, including a large supply of anti-scorbutics, preserved meats, &c.

17th. Should it in your opinion be found at any time during the cruise impracticable to carry into effect these orders, and you should be of opinion also that a further attempt south during the present season would be unavailing, owing to bad weather or obstructions, you will, on arriving at such conclusions, proceed direct to Valparaiso, and await further orders, making all necessary arrangements there in regard to a supply of provisions, &c., for the squadron. In such an event, you will immediately despatch the Flying-Fish to this anchorage for further orders, which, if we have left, will be found in a pile of stones on the summit of Burnt Island, near the tent and lighthouse; in the absence of which, however, she will proceed to Valparaiso for further orders.

In conclusion, I cannot express to you how much I feel for the safety of yourself, officers, and crews, on this first exploration you are about to make, and how deep an interest and anxiety I shall feel for you; that you may meet with all the success I wish for, and that we may rendezvous again to carry out this great national enterprise, is the fervent prayer of your attached friend,

CHARLES WILKES,
Commanding Exploring Expedition.

CAPTAIN WM. L. HUDSON,
Peacock.

XXVI.

U. S. Ship Vincennes,
Orange Harbour, Terra del Fuego,
February 22d, 1839.

Sir,—

The Sea-Gull, placed under your charge, will be attached to the Porpoise. I cannot impress upon you too strongly the necessity of keeping company, as the safety of the crews of both vessels may otherwise be hazarded; you will, therefore, use every means in your power to prevent a separation.

1st. You will keep a strict daily journal of every occurrence relative to your co-operations with the Porpoise.

2d. A skeleton chart will be furnished you, comprising the latitudes and longitudes in which you will cruise, upon which chart an accurate track will be laid down of her route; also the position of all land, islands of ice, &c., which may be observed. Astronomical bearings, when the weather will permit, will be preferable for this purpose.

3d. You will enter also in your journal, the variation of the compass, morning and evening; sketches of refractions, and minute observations of all phenomena that may be seen; also, sketches of stratifications of ice, temperature of the water on the weather and lee sides of ice-islands, &c.; the form and direction of currents, and the apparent formation of the ice; also the collection and preservation of any specimens of earth or stones that may be discovered on the ice, and the appearance of any halos, auroras australis, &c.

4th. In the event of parting company, you will rendezvous, first, for the Porpoise, off Cape Melville, George's Island, in latitude 61° 55′ S., longitude 58° W., to remain two days; and, secondly, at and near the coast of the east side of Palmer's Land. You will, in such a case of separation, avoid by all possible means being shut up in the ice, and will, on the probability of such an event, proceed at once to Deception Island, which harbour you will if possible enter, and deposit in a grave formed of stones, on the north side of the entrance of the harbour, information relative to your parting company, &c.; and you will remain there for orders as long as your safety will allow, and while there you will hunt for and examine a self-registering thermometer, left there some time since on the point forming the cove.

5th. You will give particular attention to the health and comfort of

all on board, and you have an ample supply of provisions, clothing, preserved meats, antiscorbutics, &c.

Wishing you a safe and successful cruise,

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

LIEUTENANT R. E. JOHNSON,
In charge of Tender Sea-Gull.

XXVII.

U. S. Ship Vincennes,
Orange Harbour, Terra del Fuego,
February 22d, 1839.

SIR,—

The tender Flying-Fish, placed under your charge, will be attached to the Peacock, and under the orders of Captain Hudson, during the present cruise.

1st. I cannot impress too strongly on your mind the necessity of avoiding, under any circumstances, parting company with the Peacock, as the safety of all on board that vessel may be hazarded thereby; every means will be taken therefore to prevent a separation.

2d. You will keep a strict daily journal of every occurrence relative to your co-operations with that vessel.

3d. A skeleton chart is furnished you, comprising the latitudes and longitudes in which you will cruise, and on which chart an accurate track must be laid down of the route, daily; also, the positions of all land, islands of ice, &c., which may be observed. Astronomical bearings, when the weather will permit, are preferable for this purpose.

4th. You will also enter on your journal, the variation of the compass, morning and evening; sketches of refractions, and minute observations of all phenomena that may be seen; also, sketches of the stratification of ice, temperature of the water on the weather and lee sides of the islands, the form and direction of currents, and the apparent formation of the ice; also, the collection and preservation of any stones, specimens of earth, &c., that may be discovered on the ice, and the appearance of any halos, auroras australis, &c.

5th. If you should unfortunately be separated from the Peacock, the following rendezvous are fixed by Captain Hudson, for meeting again, if possible:

1st.	Latitude	62°	S.,	longitude	80°	W.,	to wait	half a day.
2d.	"	64°	"		90°	"	one	"
3d.	"	65°	"		100°	"	"	"
4th.	"	66°	"		105°	"	"	"

And you will seek the nearest to the above named, coasting along the ice as near as possible, and locating your position on your skeleton chart.

6th. The Peacock will pursue the route laid down in the orders to Captain Hudson, of which the following is an extract, and will give you an idea of the intended cruise, viz.:

"On sailing from here you will proceed to longitude 105° W. (Cook's Ne Plus Ultra); from thence extend your researches as far to the southward and eastward as you can reach, without rendering yourself liable to be closed in by the ice.

"You will then navigate to the southward and eastward, until you reach the western side of Palmer's or Graham's Land, as it is called on the charts.

"It is believed that the latter part of the season will afford you an opportunity of penetrating here further south than has yet been done, and possibly meet an extension of Palmer's Land, more to the westward; if you should succeed, you will trace it to the eastward, and return by the southward and eastward side of it to this anchorage, (thus circumnavigating this land,) unless you should receive any information from me previously.

"In your progress from Cook's Ne Plus Ultra, of longitude 105° W., you will endeavour to get more and more to the southward, if possible, and reach to the southward of the small islands of Peter I., and Alexander, the farthest land south discovered by the Russians in 1821, and fall in with what Briscoe has denominated Graham's or Palmer's Land, (its proper American name.) I am of the opinion that it extends much farther to the southward and westward than where Briscoe saw the Adelaide Mountains.

"Your endeavours must be to get to the south of Peter I., and Alexander Islands, or south of the Russian track."

7th. In the event of your separating from the Peacock, and not joining her again, which, however, is not probable, you will coast along the ice, agreeably to directions, as far as it may be prudent and safe, and proceed to Deception Island for information in regard to us, which if there, will be found in a sailor's grave, at the north of the entrance of the harbour, where you will deposit a communication; and in the absence of other orders, you will proceed to this anchorage, where you will find me, or orders on the summit of Burnt Island, at the flagstaff; in the absence of which, or any of the squadron, you will proceed direct to Valparaiso.

8th. You will attend particularly to the health and comfort of all on board; you have ten months' provisions on board for the crew, and

an ample supply of warm clothing, antiscorbutics, preserved meats, &c., in the event of detention, which will be expended in the most judicious manner.

Wishing you a safe and successful cruise,

I am, &c.,
CHARLES WILKES,
Commanding Exploring Expedition.

P. S. You will, if possible, obtain from Deception Island a self-registering thermometer, said to have been left some time since on the point of the cove.

To LIEUT. WM. L. WALKER,
In charge of Tender Flying-Fish.

XXVIII.

GENERAL INSTRUCTIONS, FOR BOAT DUTY, SURVEYING, ETC.

IMMEDIATELY after anchoring in position, you will hoist your distinguishing pennant, keeping it up till every thing is done, such as distance measured, astronomical bearings taken on one of the vessels, the angle between her and the others; also, angles on any thing remarkable on shore, such as headlands, flag or signal staves, huts, trees, &c. When ready to change your position, haul down your distinguishing pennant; and when ready to measure the base or distance by sound, which is the first thing to be done after you are in position, hoist your ensign at the fore; as soon as all the vessels have answered, you will dip it and fire in a few seconds; run up the ensign again, and repeat firing three times.

To communicate the elapsed time to this vessel, hoist the distinguishing pennant of the vessel whose distance is to be shown, and with it the "number" indicating the number of seconds; the quarter, half, or three-quarters, may be designated by hoisting the first, second, and third repeaters under all, thus—the third repeater under No. 18, would signify eighteen and three-quarters seconds of time. It will be seen, therefore, that when it is necessary to repeat a number, one of a similar denomination must be used, as another signification is given to the repeaters.

The astronomical bearings may be communicated in the following manner, with the distinguishing pennant of the vessel whose bearing is to be shown: hoist the "number" indicating the degrees with the

cornet above, if the bearing be from the north, but under, if from the south; then the corresponding numbers for the minutes and seconds; with the preparatory pennant, if to the east, or without it, if to the west, thus: the cornet under 56°, would signify S. 56; then 04–26, would correspond, 04′ and 26″ W., or, the whole being put together, would stand, S. 56°, 04′ 26″ W.

Each officer, before leaving the ship, will see that his boat is furnished with water and provisions for three days for her crew; that her oars, spars, and sails are in good order, compass, sextant, spy-glass, log-line and current-log, leads and lines, grapnel and lines for mooring, materials for striking a light, lantern, and field-book; also, that their watches have been set to ship's time.

The boats will be divided into parties or divisions; each division will be under the orders of an officer appointed to take the charge, who will receive the general instructions for the day, and who will wear their boat ensigns as a distinguishing mark.

The formula of the field-books will be understood as follows:

At the head of each page the name of the boat and the date will be inserted.
In column 1st. The time of taking the angles.
2d. The soundings, and their nature.
3d. The soundings reduced.
4th. The name of the object and the angle to the left of the observer.
5th. The name of the centre objects only, unless there be three angles measured; then, the centre angle will be inserted with both the centre objects.
6th. The name of the object and the angle to the right of the observer.

Officers are expected to note any observations on the current, soundings, &c., that they may deem necessary to make the results less liable to misconstruction, and obviate explanation.

When a line of soundings extends to, or commences at the shore, the point must be accurately fixed by at least three angles, and the shore sketched in on both sides for some hundred yards, or to some well-defined object.

The daily orders must be carried into strict execution; and if an officer does not clearly understand, or perceive any difficulty therein, he will so state before leaving the vessel.

If a boat should require assistance, she will hoist the blue flag, or No. 5.

After returning on board, each officer will furnish his commanding officer with a copy of his day's work, with the soundings reduced to the standard; a diagram of his boat's track; and, if co-operating with other boats, their relative positions at each anchorage; it being under-

stood in the diagrams, that the top of the paper will always represent the north.

In case of night coming on, the vessels will, if their boats have not joined them, fire a gun and then a rocket,—the first to call attention, the latter to give the direction; the rocket will be repeated every fifteen minutes, and the gun every half hour; keeping up their night distinguishing signals till their respective boats have returned; and when any boat joins them other than their own, to remain the night from stress of weather, fog, or any other cause, the vessel will fire two guns in quick succession.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
February 22d, 1839.

XXIX.

INSTRUCTIONS FOR THE VINCENNES.

U. S. Ship Vincennes,
Orange Harbour, Feb. 23d, 1839.

LIEUTENANT CRAVEN will enforce strictly the regulations of the ship. The following officers are left on board the ship for duty, viz. Lieutenant Carr; Lieutenant Alden; Purser Waldron; Chaplain Elliott; Acting-Master North; Passed Midshipmen Totten, Reynolds, May, and Sandford; Acting Midshipmen Clemson, Thompson, Clarke, and Elliott; and the four forward officers.

1st. Lieutenant Craven will have the men who have been transferred temporarily to this ship, stationed and quartered at the guns, dividing the officers in such divisions that they may be regularly exercised agreeably to the rules and regulations.

2d. Lieutenant Craven will have all the sails, boats, rigging, and equipments of every description, overhauled and repaired.

3d. The comfort and health of the crew will claim his particular attention, the regularity of their meals, and the avoiding unnecessary exposure to the cold, &c.

4th. The baking of bread, it is desirable should be carried into operation, in order that as small a quantity of ship's bread should be used as possible. For this purpose, the oven is to be erected on the gun-deck, and which it is anticipated by constant use will be sufficient for this purpose; if, however, from any defect, it should prove otherwise, recourse must be had to serving out flour in lieu of ship's bread.

5th. Every opportunity must be taken advantage of to supply the crew with fish, wild celery, &c., and a proportion suffered to visit the shore when the work and weather will permit, who must return in proper season, (early in the afternoon, by supper-time,) on board.

6th. The sheet cables will be kept constantly bent, and an anchor-watch duly observed, night and day; the three passed midshipmen and Mr. North, will keep the watches regularly; and the deck is never to be left without one of them, and a midshipman.

7th. When his duties will permit, he will employ his time, and that of the crew, in dredging and fishing, and all specimens will be carefully preserved, and drawings made of them.

8th. He will give all the assistance and afford every facility in his power, to aid the duties confided to Lieutenants Carr and Alden.

Lieutenant Carr will attend to the astronomical and other observations (including tides) on shore, in which he will be assisted by Dr. Fox and Chaplain Elliott, so far as the former's duties will permit for this purpose. The observatory-house is to be set up on shore, and other arrangements made suitable for the accommodations of them and ten men, with a boat: this position will be in what is called Forge Cove, on the weather side, near the anchorage of this ship.

Lieutenant Alden is charged with the survey and examination of the northern side of Hermit Islands, and the passages between them and Terra del Fuego, including Goree Road, and the two small islands between the two. All kelp that he may discover is to examined; also the anchorage under Lenox and New Islands; and to make a careful examination of all other places that may seem to offer security for vessels from the prevailing winds; making notes and taking bearings that may serve for directions for vessels seeking shelter. Also the coast between False Cape Horn and Weddell Cape, which is to the westward of this harbour, being the parts of this coast that have not been sufficiently examined by Captain King.

He will be accompanied by a passed midshipman on this duty: the launch is to be fitted with her deck, sails, &c., with a crew of ten men, and provisions, among which are included preserved meats, &c., for twenty days, and a small whale-boat (the Fox), or another, if deemed more suitable, a tent, and every other convenience that he may deem requisite to make the service efficient and comfortable to the party. He will proceed on this duty as soon after my departure as his preparations and the weather will permit; and great hopes are entertained that he will be enabled to complete these arduous and important duties before my return. This service is considered a hazardous one, and he will use every endeavour to avoid risking himself, men, and boats, as

in the event of any loss of the latter, much detention would result to the after operations of the Expedition.

It is hoped that Lieutenant Alden will be enabled, prior to this duty being undertaken, to finish the chart of the Rio Negro.

Acting-Master North will assist Lieutenant Carr in the care and attention to the chronometers, their rate, observations, &c.

It is expected that all passed midshipmen, and midshipmen, will exert themselves in carrying out the various and important duties confided to them at this anchorage.

CHARLES WILKES,
Commanding Exploring Expedition

XXX.

U. S. Ship Vincennes,
Orange Harbour, Terra del Fuego,
February 23d, 1839.

SIR,—

You will receive on board the U. S. Ship Relief, under your command, the scientific gentlemen, who have been transferred from this ship and the Peacock, to the Relief, for scientific duty during the present cruise, and you will afford them every possible facility and accommodation to enable them to make such observations and collections as may be in their power.

1st. You will proceed without delay to the Straits of Magellan, entering by the west through Brecknock Passage, Cockburn's Channel, and Magdalene Sound.

2d. Captain King's chart of the Straits of Magellan may be depended on for all requisite information; his book of directions will also give you a full knowledge of the tides, currents, anchorages, &c.; I would recommend its attentive examination.

3d. You will keep full and complete journals of all your observations as heretofore, in regard to the soundings, temperature, &c.

4th. You will on anchoring set up tide-staves, and enter all observations agreeably to our formula; and you will continue your meteorological journal hourly.

5th. Should you experience any gales or storms, you will note their progress, from the commencement to the end, with their appearance, &c.; and any occurrence of interest will be immediately noted in your journal.

6th. You will also explore and survey Useless Bay in the Straits of Magellan, and connect your observations, &c., with Captain King's

chart; and you will stop at Port Famine, on your way there and back, and such other safe harbours as may appear to offer advantages for scientific observations and collections; and you will return to this anchorage by the Straits of Le Maire, on or before the 15th of April next, if possible, where you will find me, or orders on the summit of Burnt Island; in the absence of which, you will proceed direct to Valparaiso.

7th. The north side of the Straits of Magellan affords at all times good anchorage; you will keep it close on board.

8th. The period of your absence must not exceed fifty days, if it can be avoided; during which time I have no doubt all on board will exert themselves in making the best possible use of the short space of time allowed.

9th. You will avoid being blown off to the eastward, as in such event the Expedition will suffer.

10th. Should any accident happen to the Relief, you will despatch without delay a boat to this anchorage, under charge of an officer, through the route you are to enter, pursuing thence Whale-Boat and Darwin Sounds, through the Beagle Channel, as far as the passage of Host and Navarin Islands, thence into Nassau Bay to Orange Harbour.

11th. Mr. Percival has been ordered to the Relief as pilot; he has been in the Straits of Magellan, and will afford you all the aid in his power.

You will give particular attention to the health and comfort of all under your command.

Wishing you a safe and successful cruise,

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

LIEUT. COM. A. K. LONG,
U. S. Ship Relief.

XXXI.

U. S. Ship Peacock,
At Sea, lat. 60° S., long. 84° W.,
April 1st, 1839.

SIR,—

After separating from you in Orange Bay on the 25th of February, I proceeded with the tender Flying-Fish, under the command of Lieutenant Walker, to carry out your instructions, in making a recognizance south. On the afternoon of the 26th, a few miles to the west-

ward of the islands of Diego Ramieres, we encountered a gale, in which we lay-to forty hours, in the course of which we parted from our little consort, although we had observed all the precautions of firing guns, burning blue-lights, &c.; after waiting in vain fourteen hours, with the hope of again meeting her, we resumed our course for the first rendezvous I had appointed with Lieutenant Walker, in the event of separation; that, as well as some of the others, we were unable to reach, from a succession of westerly gales and boisterous weather. To have persevered in working up for them would have consumed the little time we could yet hope for in the advanced state of the season, for our further progress south.

Without troubling you with a more minute detail of occurrences, suffice it to say, that on the 11th of March, we fell in with the first icebergs, in the latitude of 63° 30′ S., and longitude of 80° W., after which time they were our constant companions (and on more than one occasion very troublesome ones) until we reached the latitude of 68° 08′ S., and longitude of 95° 44′ W., where to my great joy, we fell in with the Flying-Fish, and learned from Lieutenant Walker that he had passed near most of the appointed rendezvous, and worked down from 105° W., until he reached about 70° S.; that the whole surface of the ocean in the direction of south and west presented a perfect and impassable barrier of ice; that he had been completely frozen in for a short time on the 23d, and the ice forming rapidly around him, when, fortunately, a breeze of wind rescued him from his perilous situation. When we fell in with him, he was endeavouring to push his way north.

From the time of our first falling in with icebergs, we had been daily passing great numbers (as will be shown by the chart), and encountered on the 17th and part of the 18th, the heaviest gale and sea we have experienced since we left the United States; the thermometer in the air at that time standing at 21° of Fahrenheit, and the water at 28°; the ship completely coated with ice, every spray thrown over her freezing, and about her bows and head fairly packed with it. From the 19th to the 25th, we were without a sight of the sun or sky, surrounded by ice and icebergs, within the most neighbourly distance. During a lift of the fog, for a few moments only, on the morning of the 22d, and by the aid of an ice-blink, we discovered an extended range of icebergs and field-ice in mass, presenting a perfect barrier to our further progress south in that direction; and so completely were we hemmed in by icebergs on that occasion, that I was compelled to carry all the canvass on the ship that she would bear, and work her out into some more open position, through a fog so dense as to limit our view to two or three times the length of the ship.

In doing this, we of course kept well prepared, as the different icebergs popped upon us, to tack, ware, or perform such other evolutions as were found necessary to avoid them.

On the evening of the 25th of March, having reached the latitude of 68° 08′ S., and then in longitude 95° 44′ W., (we had been as far west as 97° 58′,) with the air at 29°, and the water 30° of Fahrenheit, —having had it much lower, as far back as the 17th, and to the northward of us, where the ship was covered with ice, as well as some parts of her gun-deck,—the sun having crossed the equator, and made some northern declination; the shortness of the days here, and the little time allowed for running the ship amongst icebergs, without much hazard, in consequence of fogs and snow-storms; the miserable condition of the Peacock for a winter's campaign, in the event of being frozen in; the masses of ice we had yet to pass through on our return, and the nature of my instructions: these circumstances, combined with the report of Lieutenant Walker, premonished me of the necessity of turning the ship's head towards a more temperate climate.

It required more moral courage to bring my mind to this decision than I can well describe, for we had at that moment less ice about us than at any time since we had entered its neighbourhood; and had I followed my own inclinations merely, and allowed the promptings of ambition, or love of praise, to have governed my decisions, regardless of the future operations of the Expedition, the lives of my officers and men, and the trust reposed in me by the government, I should indeed have been unworthy of the trust I hold, and ever felt a consciousness, that whatever more might have been achieved, by any further attempt south, at that late season, would have been acquired only by recklessly hazarding, what an honest conviction of duty to my country, and the lives intrusted to my care, most decidedly forbade.

We observed the aurora australis for the first time on the night of the 15th of March, in the latitude of 65° 24′ S., and again on the 16th, 18th, and 26th. On the night of the 18th, an arc of pale twilight was described in the southern quarter, reaching an altitude of twelve degrees, and extending from southwest to southeast; both above and below the arc were horizontal sheets of dark stratus clouds, and between the lower strata and the horizon, a suspended bank of mist or vapour, having all the appearance of a shadow cast on the sky; rays of light were continually being thrown out along the whole extent of the arc, assuming various hues, of pale red, light blue, violet, and straw-coloured tints; radiating towards the zenith, and reaching altitudes of from twenty-five to forty-five degrees. These exhibitions were confined to that particular portion of the horizon, and continued

through the greater part of the night, which was of the clearest starlight,—the Southern Cross garnishing the zenith, and the Magellan clouds showing more distinctly than I had ever before seen them. The weather, during our cruise south, was very unfavourable for witnessing any very splendid exhibitions of the aurora; for, with few exceptions, during our stay in the Antarctic Circle, we were enveloped in dense fogs, or found only occasional relief from such falls of snow, as may fairly be classed with any one of our old-fashioned snow-storms at home.

The greatest dip obtained, from the experiments with Dolland's needle, was 78°; and in the latitude of 68° S., we found nearly four points easterly variation.

Mr. Peale has been fortunate enough to obtain as specimens, some new and rare Antarctic birds.

The officers and crew have enjoyed excellent health, been prompt and efficient in the performance of their respective duties; and for their cordial co-operation and aid in carrying out my views, deserve my warmest thanks; and I beg you will officially say so in your report to the Honourable Secretary of the Navy. I herewith enclose you Lieutenant Walker's report, who certainly deserves, with his officers and men, great credit for his perseverance.

I have drawn up this report in great haste, for the purpose of despatching the Flying-Fish to you, with the earliest intelligence, and shall proceed direct to Valparaiso, to carry out your instructions there.

Very respectfully,

(Signed) Wm. L. Hudson,

Commanding U. S. Ship Peacock.

Captain Charles Wilkes,
Commanding Exploring Expedition.

U. S. Schooner Flying-Fish,
At Sea, March 26th, 1839.

Sir,—

In obedience to your order of to-day, I have the honour to report, that after separating from you on the evening of the 26th ultimo, we hove-to under a reefed foresail until near meridian the next day, when, the gale moderating, we kept off the wind, with the hope of again falling in with you; and on the evening of the next day made a large sail to the northward of us, standing to the westward; we immediately gave chase, but on coming up, made her out to be a British merchantman.

We then stood to the westward for our first rendezvous, with strong

gales from about south-southwest to west-by-north, accompanied by a very large sea,—vessel labouring much, decks and ways becoming leaky, but sustained no material damage until the 5th March, when our jib was badly split.

On the 7th, we reached our first rendezvous, and whilst lying-to there in a heavy gale, our decks were frequently swept by the sea, and boats crushed. On the night of the same, the sea boarded us, ripped off the companion-slide, washed the larboard binnacle from its cleats and lashings overboard, injured the helmsman and look-out, and half filled the cabin.

On the evening of the next day, the wind moderating, set the reefed mainsail, but the vessel sending violently in the old sea, parted the reef-pendant, and tore the sail badly; took in the second reef and set it.

On the 9th, the leakage increasing from stress of weather, were obliged to move aft all the bread, replacing its weight in the bread-room by less perishable stores.

On the 11th, in the morning, found our new jib nearly gone from the stay, but one or two hanks remaining; got it in, and afterwards bent it with a lacing; set the reefed mainsail, and lowered the foresail for repairs; parted again the reef-pendant of the mainsail; took the third reef in it; finished the repairs of the foresail, set it, and furled the mainsail.

We were now up with our second rendezvous; but the wind growing fresh and the sea rising, the weather thick, with a heavy fall of snow, and feeling confident I should only lose time by heaving-to, stood on for the third rendezvous.

I have been particular in stating our losses in sails, as it was one of the heavy causes of our not reaching the rendezvous sooner. I had determined on making the old sails last, if possible, for the passage south, reserving the better suit for our return, when, from the lateness of the season, I believed we should encounter, if possible, more tempestuous weather; and owing to the close stowage of the hold, it would have been no trifling labour under the circumstances to have broken out for them; and, furthermore, the old suit would necessarily have gone below wet, to increase the discomfort of the already comfortless condition of the 'tween decks.

The weather continuing much the same, with the addition of rain, hail, and snow, in almost every watch on the 14th and 15th, we reached the third rendezvous, where we hove-to for nearly twenty-four-hours.

I now despaired of again joining you, but nevertheless felt it my

duty to run over the track laid down for me, and on the 18th reached the fourth and last rendezvous, having passed the 17th in the vicinity. We turned our head south for Cook's Ne Plus Ultra, the longitude alone being specified in the instructions—we continued our course to the southward, the weather at times very thick, ice-islands becoming numerous, and occasionally passing a little floating ice, until half-past 11 P. M., of the 19th, when it became so abundant and in such large masses around us, that we hove-to until daylight, frequently filling to avoid damage from it.

At four o'clock A. M., we again stood on, but were soon again from the same causes obliged to heave-to. At this time the water was much discoloured, and much of the ice also having the appearance of being but lately detached from land. I got a cast of the lead in one hundred fathoms,—no bottom. The same discoloration of the water I afterwards observed always in the vicinity of extensive masses of ice; and thought it might possibly be produced by refraction. At eight o'clock the fog suddenly lifted, and to the amazement of all on deck, disclosed to us a wall of ice, from fifteen to twenty feet high, extending east and west as far as the eye could reach, and spreading out into a vast and seemingly boundless field to the southward, and so close under the lee that I did not venture to ware, but after getting the foresail on her, stood on to the westward, luffing and bearing away alternately to avoid a dangerous contact with large detached masses, with which the sea was filled in all directions. At length finding a place sufficiently clear to put the helm down, we worked out, with the same risk, to the eastward, and at nine o'clock had reached a comparatively smooth sea. Our latitude at this time about 67° 20′ S., longitude 105° W.; extremities of the field, as far as visible, bearing per compass east-by-north and southwest-half-west.

It was formed of various sized masses, of all shapes, and shapeless, and of several colours, a dingy white (if I may say so) prevailing. Continued to coast along the ice until meridian, when, seeing large ice ahead, and weather thick, hauled to the northward, and soon ran into blue water. At 2 P. M., weather clearing a little and sea tolerably clear, stood to the southward and eastward, and at $3^h\ 20^m$, saw the ice in unbroken ranks, bearing from west-by-south to southeast-by-south. At four, the weather very thick, stood to the northward and eastward; water discoloured: at the time of taking the above last bearings, our view not extending beyond a few miles.

At six o'clock, weather lighting up, discovered field-ice distant about four miles, bearing from southeast to east per compass, passing through floating ice. At eight, lowered the foresail, and hove-to head

to the northward, winds moderate, with thick rainy weather, but finding her drifting upon the ice seen before dark, filled and stood to the northward and eastward. At ten, the ice thickening around us, tacked to the westward. From eleven to midnight saw no ice, but hearing a crashing sound to the northward, were for some time apprehensive that we might be embayed; however, having nothing to direct us in the gloom, we continued under easy sail our course to the westward.

March 21st, latitude at meridian observed, 68° 41′ S., longitude, chronometer, 103° 34′ W. At four o'clock this morning was on deck, and as soon as the weather cleared a little, hauled up to the northward, to get clear of the field, which we had every reason to suppose extended far to the eastward and westward of us. After attaining the position which we felt confident would at least give us an open sea to the westward, we kept off, gradually feeling our way to the eastward. At seven, saw the ice extending in broken ranges from south-by-east to northeast, and the whitish glare on the horizon, (which our experience had already informed us was an unfailing indication of its presence,) extending far round to the westward. At eight o'clock, water discoloured, and many immense ice-islands around us, which accounted for the broken appearance that had been presented at seven. The wind being fair, and being able to see a safe distance, (two or three miles,) I ventured to give her southing, running through the islands, and at 4 P. M. were making south true, eight knots: this we continued until eight, when we reefed the mainsail, and lowered the foresail, with the intention of standing on during the night, flattering ourselves we should get beyond Cook, before noon; but, alas, our hopes were blasted in the bud: it soon became so thick we could not see at all. Having some floating ice around us, and having seen the unfailing indication of ice to leeward, before dark, we most reluctantly hauled over the jib-sheet and hove-to; the wind soon freshened to a gale, with a rising sea.

March 22d, latitude, at meridian, about 70° S., longitude 101° 16′ W. From meridian to four, fresh northwesterly winds, with rain, the weather lighting up at intervals, showing us to be in the midst of innumerable ice-islands, so closely packed as scarce affording us a passage between them; though still lying-to, we were obliged to luff and bear away for thirteen of them. At four, making short tacks to the northward and westward,—islands, field, and drift-ice, in every direction, and close around us.

From four to eight, I was on deck, and after looking round upon the goodly company, selected the icebergs as my "compagnons du voyage;" the wind was still fresh, and the weather misty. I stood to the north-

ward and eastward, and when in doubt, hove-to, to windward of an island, and drifted down in its wake; when finding a passage clear, would again fall back on our own resources, flat sails and a pilot-boat's bottom.

The weather grew thicker and intensely cold, though the thermometer did not fall below 30°; I attributed these changes to the ice to windward, and, believing we were getting into a clear sea, I stepped below to stick my toes in the stove. I had not been below certainly five minutes, when the look-out called to me that the fog had lifted, and that we were surrounded. I jumped on deck, and such was too truly the case: narrow fields of ice, with narrow passages of water between, and extending longitudinally in a direction perpendicular to the wind, formed a complete circle round us, stretching in all directions as far as the eye could reach, and beyond, icebergs, packed and floating ice. I did not know at first how I should proceed; but, after a careful look round, I ran over to the weather shore of the pond, and stood along it in search of a passage, that I could not find; but, observing at intervals "sutures" in the ice, where it did not appear firmly formed, I resolved to take advantage of this, and, if possible, force a passage, feeling it necessary at all hazards, to extricate ourselves as soon as possible. Having the wind free, I gave her the main-sheet, and manned it well, and having got about six knots way on her, kept close to the ice, and when at the proper distance, put the helm down, hauled the main-sheet forcibly to windward, and let fly the head-sheets; this brought her round suddenly, before she had passed through sufficient water to deaden her way; the ice cracked, we slipped over, or brushed through, and before eight o'clock I had got into a tolerably clear sea. The weather again growing thick, the wind freshening, and sea getting up, fatigued with labour and anxiety, we hove-to, under the foresail with the bonnet off; and I believe all must have returned thanks to Heaven for their deliverance.

From eight to meridian, fresh gales and weather very thick, with innumerable ice-islands, which we frequently passed at a dangerous proximity, owing to their number, and our limited vision,—the sea breaking on them with the roar of thunder, and to the height of eighty to one hundred feet; I do not believe a ship could have passed these dangers; frequently we felt cramped in stays or in waring. At ten, the sea tolerably clear, again stood to the southward and westward. At meridian, obliged to haul to the westward, many icebergs, and floating ice in large masses around us. At 4 P. M., weather clearing a little, discovered a field ahead; wore to the southward and westward. Until midnight, working to the northward and westward, many islands,

loose tracts, and floating ice passing; weather generally so thick as not to be able to see two hundred feet. From eight to midnight, passed twenty-five islands. At $10^h\ 45^m$, weather clear for a short time; saw the ice extending from southwest to northeast. At midnight, sea clearer; sails and rigging stiff with ice.

March 23d, latitude, at meridian, about 69° 17′ S., longitude 100° 30′ W. This day the weather has been clearer than for some time past. At daylight, intended keeping away to fix position of field-ice, but about that time the weather became very thick; hove-to until seven o'clock, when, no prospect of the weather clearing, stood to the northward and eastward. The sea now became tolerably clear, yet the passage of floating ice and icebergs still devolved the necessity of a bright look-out. In the afternoon, stood to the southward and eastward, and for three hours observed appearances of land; but at $3^h\ 30^m$, discovered large masses of ice, and numerous icebergs. At six, the ice bore from south to east, standing to the northward and eastward; water much discoloured. At midnight, the southern horizon brilliantly illuminated by the aurora australis.

March 24th, latitude, at meridian, about 69° 06′ S., longitude 96° 50′ W. From four to eight had moderate northwesterly winds, with snow; weather hazy. From eight to meridian, moderate breezes, with a heavy fall of snow; first part passed many icebergs, and large quantities of floating ice. At $10^h\ 30^m$, got suddenly into large fields of packed and broken ice, extending as far as the eye could reach, in all directions, and which, by the assistance of the snow, (which, in the clearer spots, laid undisturbed on the surface,) appeared to be rapidly becoming solid; the sea was cut off by the larger masses to windward, and to add to our anxiety the wind appeared declining: we lost no time in forcing out to windward, as on the former occasion. The vessel seeming ill-constructed for such rough contusions, and very fearful that her copper would be cut through, we cut up the boards in the spare-cabin berths to preserve it; but after getting into clearer water, the sea became too heavy, and while within the field I did not think we could spare the time to get them on. I am well convinced, and such was the general opinion on board, that within a short time after we cleared it, it became a firm field of ice. Having on two distinct occasions narrowly escaped being closed in by the ice, our want of fuel, the general unfitness of the vessel, and want of preparations for such an emergency, my "Instructions" called upon me most imperiously to return; and I put our head to the northward, determined to keep it so until we should change our temperature; which, with a proper ambition to get beyond previous navigators, I did the

less reluctantly, as I felt confident the season for operations in these latitudes had already passed,—the sun being already in northern declination, and little assistance to be expected from the moon and stars.

On the 25th of March I fell in with you again, sir. It had been my intention that day at noon to stand to the eastward, and, if I found the sea sufficiently clear, to pass to the southward and eastward of the island of Peter I., in quest of the western extremity of Palmer's Land, and thence to execute what should remain unexecuted of my "Instructions," with which you are well acquainted.

Fearful of an early separation from you, in the thick weather now so prevalent in these latitudes, I have hurriedly drawn up this report, which I trust will excuse its deficiency in minute details, for which I beg leave to refer you to my journal (which I shall lose no time in submitting to you), and to the log-book, and other journals of the schooner.

I cannot close, sir, without expressing my entire satisfaction with the conduct of the crew of the schooner; they have now been wet for thirty days, suffering from cold, and frequently covered with ice and snow; indeed, in my experience, I have never known men subjected to equal hardships. From such causes, from two to three of the number have generally been unfit for duty; nevertheless, the remainder have displayed an enthusiasm for the service in which they have been engaged, and have performed their duties with a cheerfulness and alacrity that, if equalled, I have never seen surpassed. I confidently trust that you will so represent their conduct to the commander-in-chief, that it may be distinguished by a public expression of his approbation.

In conclusion, sir, I must acknowledge my indebtedness to the skill and experience of Mr. Knox, and the ready attention of Mr. Hammersly, from whom I have received the most hearty co-operation.

Very respectfully, yours, &c.,

(Signed) William M. Walker,
Commanding U. S. Schooner Flying-Fish.

William L. Hudson, Esq.,
Commanding U. S. Ship Peacock, and Schooner Flying-Fish.

In looking over this communication, I believe it better to state that the appearance noticed in the ice, and of which I have made mention on the third page, amounted to a deep earthy stain. I cannot pretend to account for it.

XXXII.

U. S. Ship Vincennes,
Orange Harbour, April 17th, 1839.

Sir,—

You will await here, until the 23d instant, for the arrival of the Relief; and when she arrives, you will immediately receive on board the gentlemen whom Lieutenant-Commandant Long may transfer to the Sea-Gull. You will afford them the best possible accommodation, and proceed with all despatch to Valparaiso, where you will find me or orders.

Should the Relief not arrive here on or before the 23d instant, you will proceed on the 24th, without delay, to Valparaiso.

You will report to Lieutenant-Commandant Long, on his arrival, and show him this order, after which your detention must not exceed six hours, as it is important you should reach Valparaiso.

If you should discover the Relief off, you will run out to take the passengers on board, with as little delay as possible.

Should she not arrive on or before the 23d, you will deposit the orders for Lieutenant-Commandant Long on the summit of Burnt Island.

I am, respectfully,
Charles Wilkes,
Commanding Exploring Expedition.

Passed Mid. J. W. E. Reid,
Commanding Sea-Gull.

XXXIII.

GENERAL ORDER.

The officers of the Exploring Expedition will transmit to me, on the receipt of this order, such collections of shells, specimens, &c., as they may have made since leaving the United States, with lists of the same, for the purpose of having them placed in a proper state for preservation and safe keeping.

It is presumed that each officer has availed himself of every opportunity of aiding, by individual collections, this most important department of the Expedition.

Charles Wilkes,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
Orange Harbour, Terra del Fuego,
April 16th, 1839.

GENERAL INSTRUCTIONS IN RELATION TO THE COLLECTION AND PRESERVATION OF SPECIMENS, SHELLS, ETC.

The undersigned, commanding the Exploring Expedition, has examined the collections called for by him, and finds, with much regret and mortification, that few or none have been made.

The object of this communication is to avoid any misapprehension hereafter, in regard to the orders heretofore given by the Navy Department and myself, requiring the collection and preservation of all shells, specimens, &c.

To the country belong all our labours, and it being the earnest wish of the government, that as large and extensive collections as possible be introduced into the United States by the Exploring Expedition, it is the duty, and should be the wish of every officer, to afford all the aid in his power in effecting this object.

Any selfish ideas of accumulating for ourselves, I trust are laid aside, particularly when it is considered that the opportunity of effecting this object will be much greater by united and general collections and preservations, as all which are left, after the government are supplied, would undoubtedly be returned to those who had collected them, if desired, in preference to others.

It is believed, that with proper exertions and attention, a sufficient number can be obtained during the cruise, to supply every one who may desire it, from the general collection.

No expense or means will be spared by me on the part of the government, to place every article in the most secure state of preservation and safe keeping; this could not be done, if all specimens are retained by the persons collecting them.

1st. Hereafter, each officer will avail himself of every opportunity of making collections, on shore and afloat, and transmit them to the commander, or such person as he may designate, who will cause them to be cleaned or arranged for safe keeping, and lists will accompany them, with the name of the person who collected them.

2d. All specimens, shells, &c., (in no case exceeding one hundred,) will be required if they can be obtained.

3d. The cost of any article purchased will be refunded, should it be wanted by the government. Valuable and rare shells, seldom met with, will of course be retained by the government.

4th. The Naturalists will have every opportunity afforded them, of examining and describing any fish, shells, &c., as soon as taken.

These arrangements will, it is hoped, produce the desired co-operation, and will insure success; not only meeting the view of the

country, but also holding out to individuals the only way in which they can be sure of procuring so desirable an end, as a complete collection of all those obtained by the different vessels.

(Signed) CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
Orange Harbour, Terra del Fuego,
April 18th, 1839.

U. S. Ship Vincennes,
Valparaiso, May 17th, 1839.

SIR,

I enclose herewith the general instructions relative to the collection and preservation of specimens, shells, &c., for the information and government of the officers of the Peacock, under your command.

Some suitable person on board will be selected to preserve all articles that may hereafter be obtained.

I wish to call the attention of the officers of the squadron to the duties required of them at every port we may visit, in relation to making and noting observations, &c.

To each and all of us attaches the obligation, not only of making collections, but furnishing descriptions of foreign countries, and people, their manners, customs, and inhabitants, their climate, soil, and productions, with the many instructive and interesting incidents which are afforded us.

The government expects and requires this of all officers attached to the Exploring Expedition, in addition to their other duties; and I trust that no opportunity will be omitted in complying with all that is required or expected.

I am, &c.,
CHARLES WILKES,
Commanding Exploring Expedition.

CAPTAIN WM. L. HUDSON,
U. S. Ship Peacock.
LIEUT. COM. C. RINGGOLD,
U. S. Brig Porpoise.

U. S. Ship Vincennes,
May 25th, 1839.

SIR,—

You will proceed to the port of Callao, with all possible despatch. The Bouqueron Passage is recommended to you to enter by, as it will save you much time. You will anchor at the island of San Lorenzo, near the wharf usually occupied by the Pacific Squadron. You have

permission to lift the bowsprit of the brig, and endeavour to discover and stop the leak; this must be done with all possible expedition, as you must be ready to sail in five days after my arrival there.

You will deliver the enclosed orders to Lieutenant-Commandant Long, of the Relief.

Every exertion is expected from yourself and officers to effect this object, in the speedy accomplishment of your repairs, whilst laying at the island of San Lorenzo. You will be very particular in noting the hourly observations of the temperature of the air and water.

Two boats of the squadron will tow you to sea to-morrow morning at daylight.

Yours, very respectfully,

CHARLES WILKES,
Commanding Exploring Expedition.

LIEUT. COM. C. RINGGOLD,
Commanding Porpoise.

XXXIV.

U. S. Ship Vincennes,
Valparaiso, May 31st, 1839.

SIR,—

In consequence of the contemplated changes which have become necessary, you are hereby appointed commander of the United States Schooner Sea-Gull, one of the vessels attached to the Exploring Squadron (under my command), until further orders.

Your compensation will be the same as the lieutenants commanding brigs and schooners on the coast survey, when the Exploring Expedition left the United States, which will include all expenses while on shore or afloat.

I have directed Passed Midshipman Reid to report to you.

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

LIEUT. COM. T. T. CRAVEN,
Valparaiso.

U. S. Ship Vincennes,
Valparaiso, June 1st, 1839.

SIR,—

You will remain at Valparaiso until the arrival of the schooner Sea-Gull, one of the vessels of the Exploring Squadron, expected here hourly.

On her arrival, you will supply her with all possible despatch by requisitions on the navy agent, with all the outfits, rigging, stores, and provisions, (which you cannot more conveniently obtain at Callao,) when you will proceed direct to Callao; where you will find me, or orders with the navy agent, directing your further movements.

You will also procure any funds you may require from the navy agent on requisition and receipts, and will furnish me with a statement of the amount received and disbursed during your separation.

It is necessary you should join me at Callao, as soon as practicable. I trust, therefore, you will have every article ready to be put on board the Sea-Gull the first day after her arrival, and sail the succeeding day.

I have requested our consul, G. G. Hobson, Esq., to afford you every facility.

I am, &c.,
CHARLES WILKES,
Commanding Exploring Expedition.

LIEUT. COM. T. T. CRAVEN,
Valparaiso.

Navy Department,
December 9th, 1839.

SIR,—

The Department has observed in the newspapers a notice of your gallant and successful efforts in rescuing a portion of the crew of the Chilian sloop-of-war Monteguedo, which, it appears, was wrecked in the harbour of Valparaiso, during the gale of the 24th and 25th of July last.

Although you have already enjoyed the highest reward of your exertions, in the success which crowned them, it would not do justice to its own feelings, did it refrain from expressing to you its admiration of the fearless self-devotion displayed by you on that occasion, and which is alike honourable to yourself, to the service, and to your country.

I am, very respectfully,
Your obedient servant,
(Signed) J. K. PAULDING.

LIEUTENANT T. T. CRAVEN,
United States Exploring Expedition.

XXXV.

GENERAL ORDER.

The undersigned, commanding the Exploring Expedition, has deferred acknowledging the great gratification he has received from the reports of the commanders of the different vessels respecting the officers and crews, during their late arduous cruise, and takes this opportunity, not only to offer them his thanks, but to assure them that he has duly represented the same to the government; and feels great confidence that in the coming service they will show an equal alacrity and obedience to their officers, and a determination to carry out the views of the government and the country.

Charles Wilkes,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
June 15th, 1839.

XXXVI.

U. S. Ship Vincennes,
Harbour of Callao, June 20th, 1839.

Sir,—

In consequence of the changes which have become necessary in the Exploring Squadron (under my command), you are hereby appointed commander of the United States Schooner Flying-Fish, one of the vessels attached to the same, until further orders.

Your compensation will be the same as the lieutenants commanding schooners on the coast survey, when the Exploring Squadron left the United States, which will include all expenses while on shore and afloat.

I have appointed Passed Midshipman Knox an Acting-Master, with orders to report to you for duty on board the Flying-Fish.

I am, &c.,

Charles Wilkes,
Commanding Exploring Expedition.

Lieut. Com. R. F. Pinkney,
U. S. Schooner Flying-Fish.

XXXVII.

GENERAL ORDERS.

The undersigned, commanding the Exploring Expedition, has attentively examined the proceedings of the Naval Court of Inquiry, relative to the detention of the boat at Good Success Bay, in March last, and the conduct of Lieutenant Dale, who was in charge of her.

In the opinion of the court he concurs; having been an eye-witness to the principal transactions, and believes that the whole difficulty and detention of the boat arose and was occasioned by the inexperience of Lieutenant Dale in managing a boat in the surf: the mode of using the ample means he had; a want of determined perseverance to execute his orders; and some procrastination in effecting his progress through the surf; being influenced by the timidity of some of those with him, arising from the novelty of the situation they were placed in.

In consideration of the remarkably long confinement of Lieutenant Dale under suspension, and being fully impressed with the opinion of the court relative to his good conduct and attention to the men during his detention on shore; he is restored to duty, and will resume his duties accordingly.

The undersigned takes this opportunity to impress upon all under his command, the great necessity of adhering strictly to and carrying orders into execution, and of obtaining information relative to the best modes of surmounting difficulties before encountering them; also, to provide themselves fully with the means necessary to execute orders; and all those who may be passengers in boats to abstain from interfering or giving advice, unless it is asked,—as many delays and difficulties may thus be avoided.

He cannot refrain from expressing the high opinion he has of the conduct of Lieutenant Hartstein; also, of John Moore (quarter-master), Francis Williams (boatswain's mate), and Samuel Stretch (quarter-master), who volunteered in the attempt to afford assistance to the party on shore, and he desires to return them his thanks for their conduct.

The Naval Court of Inquiry, of which Captain William L. Hudson is President, is hereby dissolved.

CHARLES WILKES,
Commanding Exploring Expedition

U. S. Ship Vincennes,
Callao, June 20th, 1839.

XXXVIII.

U. S. Ship Vincennes,
Harbour of Callao, June 22d, 1839.

Sir,—

We, the undersigned officers of the Exploring Expedition, under your command, respectfully take the liberty of addressing you on the subject of those officers who have incurred your displeasure in consequence of having been engaged in a duel; and whom, it is understood, you intend sending to the United States, with a recommendation to the proper authority that they may be dismissed the service.

We are very far from arrogating to ourselves the right of discussing the propriety of any course you may think proper to adopt, with regard to those gentlemen; but, when we consider the youth and inexperience of the parties, we are convinced that the affair was entered into without proper reflection upon the ill effect that such conduct would have upon the reputation and efficiency of the service upon which we are engaged, and that the decided expression of your displeasure will be sufficient to deter others from the commission of a similar error; and we respectfully assure you that it would be the source of great gratification to all of us if you could render it consistent with your duties and responsibilities, as the commander of the Expedition, to overlook the offence against the discipline of the service, of which those officers have been guilty, and restore them to their duty.

We have the honour to be, very respectfully,

(Signed) Robert F. Pinkney, Lieutenant-Commandant
Overton Carr, Lieutenant.
James Alden, Lieutenant.
A. Ludlow Case, Lieutenant.
O. H. Perry, Lieutenant.
John B. Dale, Lieutenant.
James H. North, Acting-Master.
Augustus A. Baldwin, Acting-Master.
George F. Emmons, Lieutenant.
Thomas A. Budd, Lieutenant.
Samuel R. Knox, Acting-Master.
William Spieden, Purser.
George F. Sinclair, Acting-Master.
Joseph A. Underwood, Lieutenant.
H. J. Hartstein, Lieutenant.

GENERAL ORDER.

Having received a strong application from all the officers of the squadron, in behalf of the young officers lately engaged in a duel, and believing that so remarkable a circumstance as the unanimous call of all their seniors, with their pledges that the reputation of the Expedition shall not suffer from the repetition of a like occurrence, and feeling also assured as I do, that nothing of the kind will again occur during the cruise, to cast a stigma upon the reputation of the squadron, and believing that the Honourable the Secretary of the Navy, after a perusal of all the documents in relation to this case, will coincide in my views, and justify my proceedings, I have determined under all the circumstances to retain them in the squadron.

Passed Midshipmen Lewis and Harrison, and Midshipmen Blair and Henry, will therefore rejoin the Peacock forthwith.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
Callao, June 23d, 1839.

XXXIX.

U. S. Ship Vincennes,
Callao, July 11th, 1839.

SIR,—

You will, on the arrival of the Sea-Gull at this port, proceed direct to Matavai Bay, Tahiti, Society Islands, pursuing the following route.

Steering a course that will take you in or about the longitude of 105° W., to the latitude of 20° S., which latitude you will pursue until you fall in with the Low Archipelago, and continue thereon until you reach the longitude of 134° W., where you will haul to the northward, and make two islands, called by the English Minerva and Serle Island, and by the French Clermont de Tonnerre: they are in about latitude 18° 32′ S., longitude 136° W., the latter, or Serle Island, in latitude 18° 05′ S., longitude 137° W. The French and English differ as respects the situation of this island.

From thence you will stand again to the southward, passing in the latitude of 20° S., to see if Turnbull's Island does exist: it is said to be in latitude 20° 10′ S., longitude 143° W.; thence you will make and run over San Pablo Isle, another doubtful one, in latitude 20° S., and longitude 145° W., and from thence to Matavai Bay, where you will find me, or letters with the American consul, directing your further movements.

In the event of the Sea-Gull arriving after receipt of this letter, you will furnish her at Valparaiso with all necessary articles, and render her complete for the intended service. After having completed which, you will lose no time in proceeding on the route designated above.

Your attention is particularly called to investigating any shoal, reef or island that you may fall in with, not duly represented on your chart, taking azimuth bearings, when you have determined your situation.

If you should not possess the necessary charts of the Pacific Ocean, you will at once make a requisition on the navy agent for that purpose, getting the latest and the best; I have written to him accordingly to supply all your wants, believing that you will require nothing that is not necessary.

You will, of course, continue the usual observations of temperature, &c., and acquire as much information on your route as you can.

In the event of the Sea-Gull not being heard from within four months after the 1st of June, you have permission to return to the United States, or join the squadron on the Pacific Station, whichever may suit your own views. The attempt to follow the squadron would be impossible, with any chance of success; therefore I do not consider myself authorized to incur the expense, and devote the time of any officer to so vague a prospect of service.

Wishing you a pleasant and prosperous passage,

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

LIEUT. COM. T. T. CRAVEN,
Valparaiso.

Similar instructions were given to Lieutenant-Commandant Craven at Callao, omitting those parts relating to Valparaiso.

U. S. Ship Vincennes,
Harbour of Callao, July 11th, 1839.

SIR,—

You will avoid by all means in your power a separation; in the event of such an occasion, you will steer for the island of St. Paul's, or its supposed locality; thence to the island of Minerva or Clermont de Tonnerre, in latitude 18° 32′ S., longitude 136° W.; then hauling to the northward to make the Isle of Disappointment; thence by King George's Group, Waterlandt Land, and Dean's Island; and from thence to Matavai Bay in the island of Tahiti.

You will at each of these places make some stay, and remain at Matavai Bay until you hear from me.

You will pay particular attention to all your observations, and make a full examination of any thing you may fall in with.

On your arrival at Matavai Bay, you will lose no time in obtaining sights for your chronometers on shore, on Venus Point.

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

CAPTAIN HUDSON,
Peacock.
LIEUTENANT-COMMANDANT RINGGOLD,
Porpoise.
LIEUTENANT-COMMANDANT PINKNEY,
Flying-Fish.

XL.

U. S. Ship Vincennes,
Callao, July 12th, 1839.

SIR,—

You will proceed from this port to Oahu, Sandwich Islands, taking in your route the American Group of islands, in latitude 16° 10′ N., longitude 134° 50′ W. These islands have been unsuccessfully looked for by Captain Beechey, in this position; you will therefore make the latitude in longitude 130° W., to the eastward of their supposed situation, and run along it until you reach 140° W.:—thence direct to Oahu.

On your arrival there, you will leave in charge of the United States Consul, P. A. Brismade, Esq., all of the articles on board of the Relief belonging to the Exploring Expedition, excepting eight months' provisions for your crew, and sundry articles of provisions and stores to be landed at Sydney, New South Wales, agreeably to the lists enclosed herewith.

You will take from the consul receipts for the provisions which you may land for me at Sydney; you will require him, also, to have two-thirds of the flour (reserving the kiln-dried) you deliver him, baked and ready for the squadron early in the spring.

After remaining at Oahu fifteen days, you will proceed direct to Sydney, New South Wales, passing through the different archipelagoes as you may deem most expedient, and as the winds will permit. On your arrival at Sydney, you will leave in charge of J. H. Williams, United States Consul there, all the provisions and stores named in the list herewith marked "for Sydney," taking receipts for them, which you will leave enclosed for me, and request him to have one hundred barrels of the flour (reserving the kiln-dried) baked into hard bread, for the squadron, as soon as convenient.

After landing all the articles at Sydney, you will take on board sufficient ballast, and proceed, via Cape Horn, to the United States, stopping at Rio de Janeiro if you require any provisions, stores, or slop clothing, which you will obtain by requisitions on the navy store-keeper there. You will not remain at Rio de Janeiro over ten days, and will proceed to Norfolk or New York, the latter if the season will permit, to enable you to dispose of the specimens, in regard to which you have separate orders enclosed, and to which I request your particular attention.

You will take charge of, and send to the Navy Department, the log-books of the squadron sent home by you.

You will, during the cruise, take on board the Relief, and ship, all distressed American seamen whom you may meet with.

On your arrival in the United States, you will show these orders to the commander of the station, and report by letter through him, to the Honourable the Secretary of the Navy, enclosing him a copy of them, as he has been requested to direct the payment of your officers and crew by the purser of the station, to whom you will deliver the rolls and accounts, with a statement of the money and slops advanced by you, that the same may be checked, taking receipts for the same, as offsets to the amount furnished you here in money and slop clothing.

You will keep a correct muster-roll of your officers and crew, noting any changes.

You will require from the officers all their journals, specimens, &c., agreeably to the instructions of the Navy Department; all of which you will box up and deposit at the Navy Department.

I enclose letters for the Consuls at the Sandwich Islands, and Sydney. Any expenses they may incur on the stores will be refunded on my arrival.

Should the Consul and Vice-Consul at Sydney be absent, you will call on Messrs. Edwards and Hunt.

If possible, you will anchor in the inner harbour at Oahu.

You will leave for me, with the Consul at Sydney, a report of your cruise from this place to Sydney; and you will on your arrival at home, forward to the Honourable the Secretary of the Navy, under cover to me, a report of the proceedings of the Relief from Sydney to the United States, addressed to me at Washington.

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

LIEUT. COM. A. K. LONG,
Relief.

XLI.

U. S. Ship Vincennes,
At Sea, July 16th, 1839.

With a view of avoiding any misapprehension in regard to the duties of the artists attached to the Exploring Expedition, and that their services and time may be as usefully engaged as possible, I deem it proper to state, that they will not confine themselves exclusively to any particular branch, without directions from me, but will divide their duties among the different departments in such a manner as may be deemed most conducive to the interest and benefit of the whole.

Very respectfully, &c.,

Charles Wilkes,
Commanding Exploring Expedition.

ORDERS FOR OBSERVATIONS, ETC.

The following arrangements with regard to observations will be daily attended to on board the different vessels of the squadron, under the directions of their respective commanders: returns will be made to me weekly.

1st. The lieutenant, passed midshipman, and midshipman, of the first watch will assist the master in the forenoon observations for time and azimuth.

2d. Those of the mid-watch will take the meridian altitude.

3d. Those of the morning watch will assist in the afternoon observations.

4th. The officers who have no night-watch will be called upon for measuring distances during the night.

5th. The master will be informed in time, when opportunities occur for making observations for amplitude, in the morning and evening.

6th. The results of each officer, signed by him, will be sent to the commander daily, and entered by his clerk in a book of observations, who will note the time when required.

(Signed) Charles Wilkes,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
At Sea, July 16th, 1839.

U. S. Ship Vincennes,
At Sea, August 2d, 1839.

Sir,—

When you suppose your vessel at her designated distance, you will hoist your ensign for firing, which will be answered as soon as seen.

It is believed that when the Vincennes' masthead subtends an angle of 25′, you will be three miles from her.

After the signal is made to take stations, you will pursue that course which will lead you to it as soon as possible.

Immediately after the signal being made to measure azimuths, observations will be taken between the sun and vessels, during the taking of which observations, the ship's ensign will be hoisted at the peak.

You will, after we heave-to for the night, try the dipping-needles and deep-sea temperature.

You will calculate the time, so as to be near the flag-ship at night-fall, and any signals that are made will be repeated to the vessel farthest off. In case of appearance of bad weather, you will at once draw to close order of sailing unless otherwise directed.

It is desirable that all calculations should be made before the day closes. The current should be tried daily, either morning or evening.

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

CAPTAIN WM. L. HUDSON,
U. S. Ship Peacock.

U. S. Ship Vincennes,
At Sea, August 8th, 1839.

CAPTAIN HUDSON will assign watches to the scientific gentlemen and officers who are usually excused from watch, on the nights of the 8th, 9th, and 10th of August. One quarter of the heavens will be assigned to each person, who will note at once, on paper, any meteors that may appear, viz., their size; with or without train; their height; the points of appearance and disappearance; and the time of flight.

Although it may seem difficult to accomplish all of this on a meteor, yet it is possible and even easy, viz., by noting the star of the constellation near which it appears and disappears; counting until its disappearance; the arc may be accurately ascertained by a sextant; and the bearing of the two stars, its true direction; the counting compared with a chronometer will be the true time; and yet one has time to examine its length of train, brilliancy, &c.

Respectfully,

CHARLES WILKES,
Commanding Exploring Expedition.

Similar instructions to Lieutenants-Commandant Ringgold and Pinkney.

U. S. Ship Vincennes,
At Sea, August 8th, 1839.

In order more effectually to observe the periodical meteors which may be repeated, on the nights of the 8th, 9th, and 10th of August, the following officers will keep watch on those nights, and assist the officers of the watch in making observations.

With the 1st watch, Mr. Couthouy and Mr. Elliott.

With the 2d watch, Dr. Pickering and Mr. Howison.

With the 3d watch, Mr. Drayton and Dr. Fox.

With the 4th watch, Dr. Gilchrist and Dr. Whittle.

The officer of the watch will assign a quarter of the heavens to each person in his watch, who will note at once on paper, any meteors that may be visible, viz., their size; with or without train; their height; the points of appearance and disappearance; and the time of flight.

Although it may seem difficult to accomplish all this on a meteor, yet it is possible, and even easy, viz., by noting the star of the constellation near which it appears and disappears; counting until its disappearance; the arc may be accurately measured by a sextant; the bearing of the two stars gives the direction; and the counting compared with a chronometer gives the true time; and yet one has time to examine its length of train, brilliancy, &c.

Charles Wilkes,
Commanding Exploring Expedition.

MODE OF SURVEYING THE CORAL ISLANDS.

As the surveys of islands are frequently spoken of in the body of the work, I have deemed it proper to give in this place a concise explanation of the method employed for this purpose, and applied particularly to the low coral islands, together with an example to serve as an illustration of the mode in which it was carried into effect.

In consequence of the time that could be allotted to such examinations being limited, it became desirable that such a course should be pursued in our surveys as should unite to the utmost expedition the greatest attainable accuracy. A method, which it is trusted united these requisites, was, therefore, devised and communicated to the officers of the squadron in the shape of a syllabus. In this I pointed out the mode of operating, and it was recommended to their study, in order that all might become familiar with its details. The basis of this method rested upon the measure of distances by sound. For this we had ready means by firing guns alternately from the different

vessels, any three of which being stationary, the distances and positions of objects could be determined from them by direct angles, giving a double result, or by the angles between them, taken from the shore or from boats, furnishing data for the problem of "the three points." When both methods can be applied at the same time, it is evident that the utmost accuracy may be obtained. Upon the land, by employing many observers, and occupying all the points of a trigonometric survey simultaneously, the whole work might evidently be completed in a very short space of time; and in like manner upon the water, creating, by means of vessels and boats, a number of artificial stations around an island, measuring angles simultaneously at them all, and measuring the base lines by sound, the rapidity with which a survey can be performed is equally as great.

By means of the system of signals prepared by me for the Exploring Expedition, I could direct the vessels to assume any position I might select as most fit for our purpose. When these were reached, general but minute instructions, directed the observations that were to be taken at each, in doing which there was no difficulty. These observations were entered upon a deck-board, for which the following form was prescribed:

FORM OF DECK-BOARD.

TIME.	POSITION.	TIME.	AZIMUTH OF ☉.	LEFT-HAND OBJECT.	CENTRE OBJECT.	RIGHT-HAND OBJECT.	REMARKS.

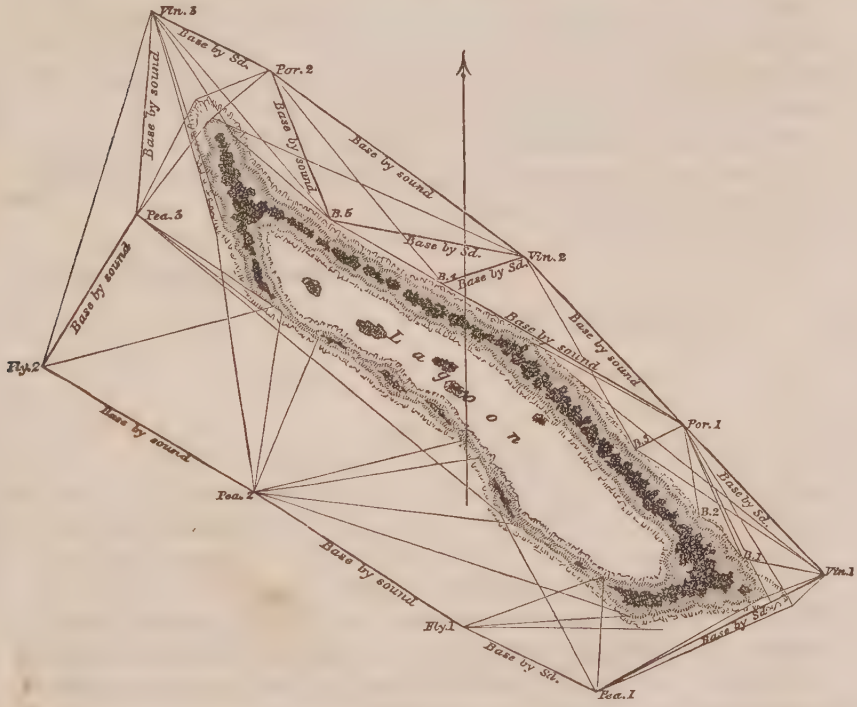
To illustrate still further the mode in which the whole squadron was made to concur in obtaining unity of action, a detail of a survey and a plot of the work are subjoined.

On approaching the island to be surveyed, signal was made to prepare for surveying duty; if boats were to be used, the number of them and the vessels whence they were to be despatched was next indicated; and finally, the position each vessel was to occupy was shown. The vessels having reached their assigned places, hove-to, and the boats, having been previously despatched, would about the same time have anchored in their assigned stations, at the points of reefs, and hoisted their appropriate signals. The vessel that is first to fire a gun then hoists an ensign at the foremast-head, which is answered by all, and the flag is in like manner displayed previous to each suc

cessive fire. The firing then goes on in quick succession from all the vessels; and at the time, all the officers being on deck for the purpose, angles are measured between the other vessels and objects on the shore, each by a different observer, as directed and indicated by the oldest officer on the deck; these angles, together with those made by the visual tangents to the shores, have always been found sufficient to plot from. During this operation the ensign is kept hoisted at the peak, so that all the angles may be taken simultaneously. Altitudes of the sun for time, and angles whence to calculate the azimuth of some one of the objects, are also taken immediately before or after the horizontal angles; and at the same time, the altitude and azimuth of the mast of one of the ships is observed for the purpose of defining their position.

When this is done, one of the vessels changes her position, while the others maintain theirs by manœuvring so as to keep the angles between objects on the shore of the same magnitude; the boats having in the mean time changed theirs also: the same operations are then repeated.

Of such an operation, the annexed wood-cut is an example.



By these alternate changes in the stations of the several vessels, and boats continued until a circuit of the island has been made, the work is finished, and when it joins, it is proved by the last distance determined

by azimuthal angles and sound, as by a base of verification. The deck-boards are now sent on board the flag-ship, where the work is calculated and plotted.

The survey of the island thus represented, which is about seven miles in length, was performed in three hours and thirty-five minutes. It began, as noted on the deck-boards, at $1^h\ 18^m$ P. M., and the observations closed at $4^h\ 53^m$ P. M.

INSTRUCTIONS RELATIVE TO THE DECK-BOARD.

The deck-board will be kept strictly according to the formula herewith sent.

The officers of the deck will be particular in marking the times at which any of the vessels change their position, and the length of time they remain in them (by ship's time); also the times that the firing takes place.

The measured angles will be at once communicated to this ship.

The original deck-paper, with the calculated azimuth results, will be sent to me at the expiration of the day's work, a copy of which will be made previously, and kept on board.

The particular attention of the officers is required to the "Instructions for Boat Duty, Surveying, &c.," of the 22d of February, 1839, also to the Manual of Surveying.

CHARLES WILKES,
Commanding Exploring Expedition.

U. S. Ship Vincennes,
At Sea, August 15th, 1839.

XLII.

U. S. Ship Vincennes,
At Sea, August 25th, 1839.

SIR,—

I was surprised to notice this evening, that the boats from the Peacock were not alongside at sunset, as there are positive written orders to that effect, unless the boats are previously recalled by signal.

I presume, also, that the officers of the boats had no authority from you to land, although I saw several on shore, which must have caused some delay in regard to those engaged on surveying duty, a service second to none in the Expedition; besides hazarding a difficulty with

the natives, which might have occasioned also a delay to the whole squadron, as they are evidently hostile.

I trust a similar occurrence will not come under my notice again during the present cruise.

The orders to the officers of the boats must be well understood before they leave the ship, and strictly obeyed; otherwise the intercourse with the islands must be restricted.

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

CAPT. WM. L. HUDSON,
U. S. Ship Peacock.

XLIII.

U. S. Ship Vincennes,
August 31st, 1839.

HEREAFTER no specimens of coral, live shells, or any thing else that may produce a bad smell, will be taken below the spar-deck, or into any of the rooms; and it will be the duty of those bringing such on board, to report them to the officer of the deck, who will see that they are placed under the charge of a man appointed to look out for them; and that this order is strictly obeyed.

CHARLES WILKES,
Commanding Exploring Expedition.

XLIV.

U. S. Ship Vincennes,
At Sea, September 1st, 1839.

SIR,—

You will proceed around the island of Raraka, and obtain its dimensions, as indicated in your orders of yesterday, turning its west point, and continuing down its south side, until you reach the position you left yesterday. Your courses and distances must be kept very accurately, and your approach to the shore and reef, as near as practicable with safety.

You will always regain the same position in the morning, that you left the day before.

After you shall have executed this duty, you will then proceed to the northeast, and make the island we discovered, called Taiara, or King's Island, and steer from there by daylight a northwest course.

You will make Carlshoff Island, and from thence proceed to the north side of Prince of Wales Island, where you will meet me; if not, however, you will determine the east and west ends of it, and that of Krusenstern's Island in its vicinity; from thence you will proceed to Matavai Bay, and await further orders.

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

LIEUT. COM. C. RINGGOLD,
U. S. Brig Porpoise.

XLV.

U. S. Ship Vincennes,
At Sea, September 4th, 1839.

SIR,—

You will proceed to windward, and visit Oura and Tiokea Islands, of King George's Group, and ascertain their correct position, and the number of islands composing the group. From thence you will proceed by Waterlandt to the Prince of Wales Island, coasting along the northern side, and taking observations as required by my orders of the 1st instant; and from thence to Matavai Bay for further orders.

Should you arrive at Matavai Bay before this ship, you will allow none of the natives to remain on board or visit the Flying-Fish after sunset.

Your vessel must never be left without two officers.

I am, &c.,

CHARLES WILKES,
Commanding Exploring Expedition.

LIEUT. COM. R. F. PINKNEY,
Flying-Fish.

END OF THE FIRST VOLUME.